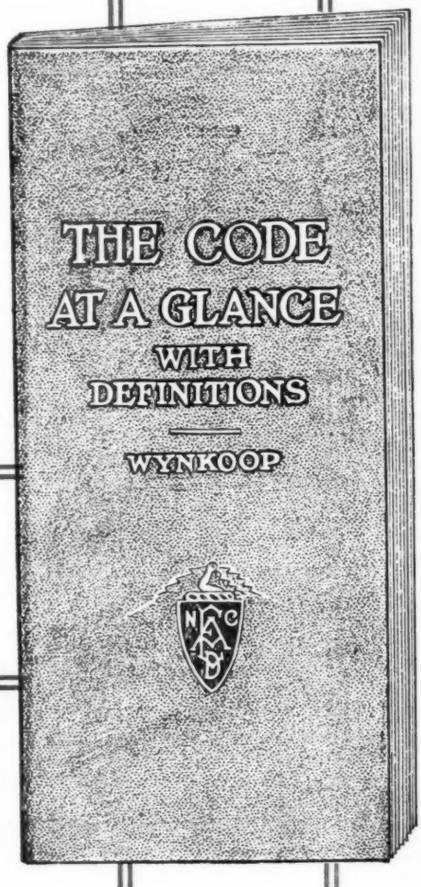
OHIO STATE UNIVERSITY
APR 3 1922
LIBRARY
TK1
E39
v.21

NATIONAL ELECTRAGIST

FORMERLY ELECTRICAL CONTRACTOR-DEALER

(ELECTRAGIST—Trade Mark)

Vol. 21, No. 6 | Official Journal of National Association of Electrical Contractors and Dealers | APRIL, 1922



Your Language

The Contractor's language is his National Electrical Code

...THE...

Code at a Glance

IS THE WIRING GRAMMAR

Written in the simplest wording by an acknowledged authority

H. S. Wynkoop, M. E.

In charge of Electrical Inspection, City of New York

One Dollar

Post Paid

National Association of Electrical Contractors & Dealers

15 West 37th Street, New York

UMI

"THE BEST THAT MONEY CAN BUY"

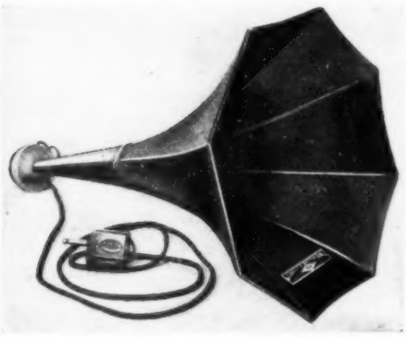
THE RADIO TRADE DEVEAU MARK OF QUALITY

DeVeau Gold Seal Radio Head Set
Cat. No. 843

DeVeau "Silvertone Standard" Radio
Loud-Speaker. Cat. No. 833

DeVeau Gold Seal Radio
Head Set. Cat. No. 844

DeVeau "Silvertone Junior" Radio Loud-
Speaker. Cat. No. 834



DeVeau "Silvertone Station Type" Radio
Loud-Speaker. Cat. No. 836

DeVeau "Silvertone Midget"
Radio Loud-Speaker.
Cat. No. 835

DeVeau Radio Hand Micro-Trans-
mitter. Cat. No. 845

DeVeau Radio Adjustable Arm
Micro-Transmitter. Cat. No. 847

DeVeau Radio Desk Micro-Transmitter
Cat. No. 846

DeVeau Radio Stationary Type Micro-
Transmitter. Cat. No. 848

DeVeau Radio Flat Plug. Cat. No.
829. DeVeau Radio Round Plug.
Cat. No. 828

We manufacture the following RADIO APPARATUS:—DeVeau "Gold Seal" Radio Head Sets, DeVeau "Silvertone" Loud-Speakers, DeVeau Radio Transmitters, DeVeau Radio Cams, DeVeau Radio Jacks, DeVeau Radio Binding Posts, DeVeau Radio Phonograph Attachments, DeVeau Radio Plugs, and other Radio Specialties.

SEND FOR DESCRIPTIVE DATA AND DISCOUNTS

STANLEY & PATTERSON, INC.

New York, U. S. A.

DISTRICT SALES OFFICES:

BOSTON C. R. Corcoran 100 Boylston St.	SAN ANTONIO Kemp Haythorne 333 McKinley Ave.	SEATTLE P. L. Hoadley Seaboard Bldg.	SAN FRANCISCO Clapp & LaMoree 589 Howard St.	LOS ANGELES Clapp & LaMoree San Fernando Bldg.	DETROIT A. W. DeVeau 81 Peterboro St.
PHILADELPHIA J. A. Vaughan Real Estate Trust Bldg.	PITTSBURGH Parke and Jaques 305 7th Avenue	LOUISVILLE Electrical Sales Co. Kenyon Bldg.	CHICAGO Doherty-Hafner Co. 730 W. Monroe St	BIRMINGHAM W. H. Beaven Jefferson Co. Bank Bldg.	HABANA Arnesto N. Rodriguez Abreu Bldg.

UMI

COMPLETE satisfaction is the rule wherever R & M Fans are used—whether in the office, home, store, theatre or hotel. And because of the satisfactory service they always give, the dealer benefits not only to the extent of his profits on fan sales, but to a considerable degree also from the good will they help build for his business in general.

This is the reason R & M Fans are sold so extensively in the stores of those dealers who are building their businesses for permanence, on a quality-service basis.

THE ROBBINS & MYERS COMPANY

SPRINGFIELD, OHIO BRANTFORD, ONTARIO

Robbins & Myers Fans

THE RESOLUTION

Whereas, There is need of words to designate our business and activities; and

Whereas, It is proper that we should deliberately add to our vocabulary such properly derived words as are required; now therefore, be it

Resolved, That the following words be adopted as recognized by us with the meanings attached: (See opposite).

FARQUSON JOHNSON
Editor and General Manager

NATIONAL ELECTRAGIST

FORMERLY ELECTRICAL CONTRACTOR-DEALER

(Trade Mark)

The Official Journal Published Monthly by the National Association of Electrical Contractors and Dealers

THE NEW WORDS

Electragy—Name of the trade or business of Electrical Contractor-Dealer.

Electragist—A person conducting such a business.

Electragician—A person working at the business.

Electragize—A verb—to work at the business—or to provide electrical equipment.

Electragic—An adjective—relating to the business.

Electragian.

Electragial.

JAY S. TUTHILL, News Editor
G. W. HAUPTLI, Advertising

Volume 21 **APRIL, 1922** *Number 6*

TO OUR READERS

All matter for publication must be in the hands of the Editor by the 10th of the month preceding publication.

All changes in our mailing list should be received by us two weeks prior to date of publication of the issue with which the change is to take effect.

TO OUR ADVERTISERS

Changes in advertisements and all advertising copy should reach our office not later than the TENTH OF THE MONTH previous to the date of issue.

SUBSCRIPTION RATES

One Year, Domestic.....$2.00
Foreign Subscriptions, including Canada, per year.$2.50
Single Copies.....20 cents

Copyright, 1921, by The National Association of Electrical Contractors and Dealers.

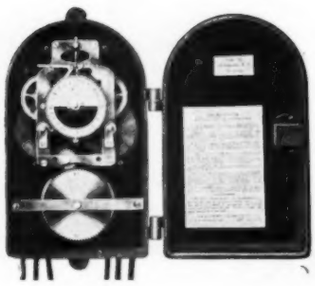
Entered as second-class matter September 1, 1919, at the Post Office at Utica, New York, under the act of March 3, 1879.

PUBLICATION OFFICE:
11 Liberty Street, Utica, N. Y.

Editorial and Business Office:
15 West 37th Street, New York City

Table of Contents and Advertising Index Next to Last Page

Hartford Time Switches



Infallible Monitors for Store Window Lighting, Electric Signs and Street Lighting Circuits.

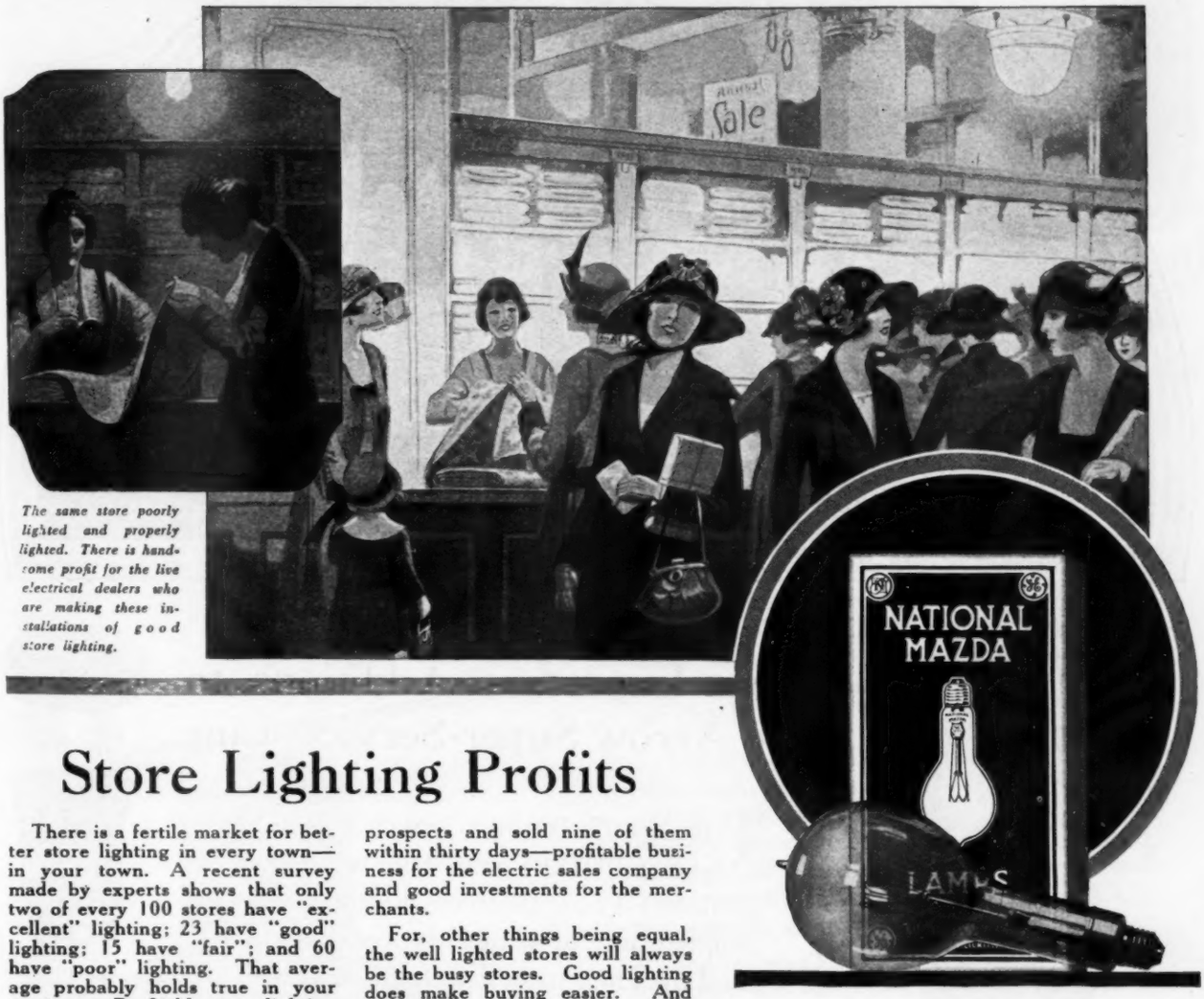
All Capacities, Various Types, Rugged Construction, Dependable in Operation.

NOW AVAILABLE

A. HALL BERRY

71-73 MURRAY ST.
NEW YORK, N. Y.

The Big Job in 1922 is SELLING



The same store poorly lighted and properly lighted. There is handsome profit for the live electrical dealers who are making these installations of good store lighting.

Store Lighting Profits

There is a fertile market for better store lighting in every town—in your town. A recent survey made by experts shows that only two of every 100 stores have "excellent" lighting; 23 have "good" lighting; 15 have "fair"; and 60 have "poor" lighting. That average probably holds true in your territory. Profitable store lighting business is yours for the getting. It's on your street and "just around the corner."

It's easy to light a store properly. The simple rules at the right tell how. And store lighting is being sold today by hustling electrical contractors and dealers. A list of twenty stores was compiled by the observers who made the survey mentioned above. An electric sales company solicited these twenty prospects and sold nine of them within thirty days—profitable business for the electric sales company and good investments for the merchants.

For, other things being equal, the well lighted stores will always be the busy stores. Good lighting does make buying easier. And merchants are coming to realize that more and more. Our **Saturday Evening Post** advertising is helping to bring about that realization.

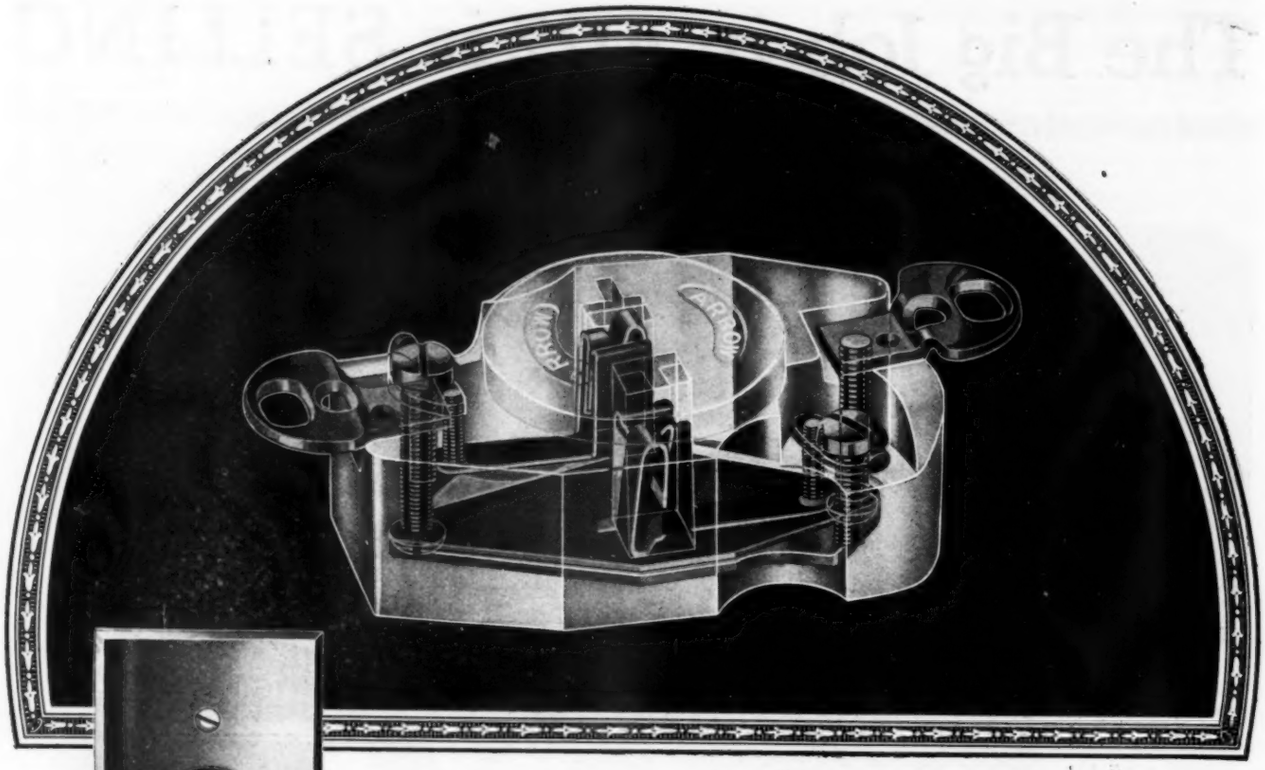
Another store lighting advertisement of National MAZDA lamps appears in the April 15th **Post.** Capitalize on the interest it will create among progressive merchants. Go after store lighting now. National Lamp Works of General Electric Company, Nela Park, Cleveland.

Each of these labels represents a Sales Division equipped to give a complete lighting service.

Recipe for Lighting the Average Store

For most stores the following rules will provide excellent illumination. *First*—Use 300-watt MAZDA Daylight lamps or 200-watt MAZDA C lamps. MAZDA Daylight lamps are preferable, under most circumstances, because (1) they show colors more accurately, and (2) their light blends more agreeably with natural daylight. *Second*—The space between lighting units should not greatly exceed ten feet. *Third*—The lamps should be properly shaded. Shades and reflectors, when made of glass, should be of dense white glass rather than clear or frosted glass, and should surround or enclose the lamp. *Fourth*—Clean the lamps and shades once a month.

NATIONAL MAZDA LAMPS



Arrow Single Receptacle with Plate

Arrow Duplex Receptacle Catalog No. 8212

Two Important Additions to the Arrow Super-Service Line

THE ARROW DOUBLE T-SLOT CONVENIENCE OUTLET AND THE ARROW CONVENIENCE PLUG are recent additions to the complete line of wiring devices manufactured by The Arrow Electric Company.

They are made of composition and are of unusually attractive appearance. Both should be a part of modern wiring.

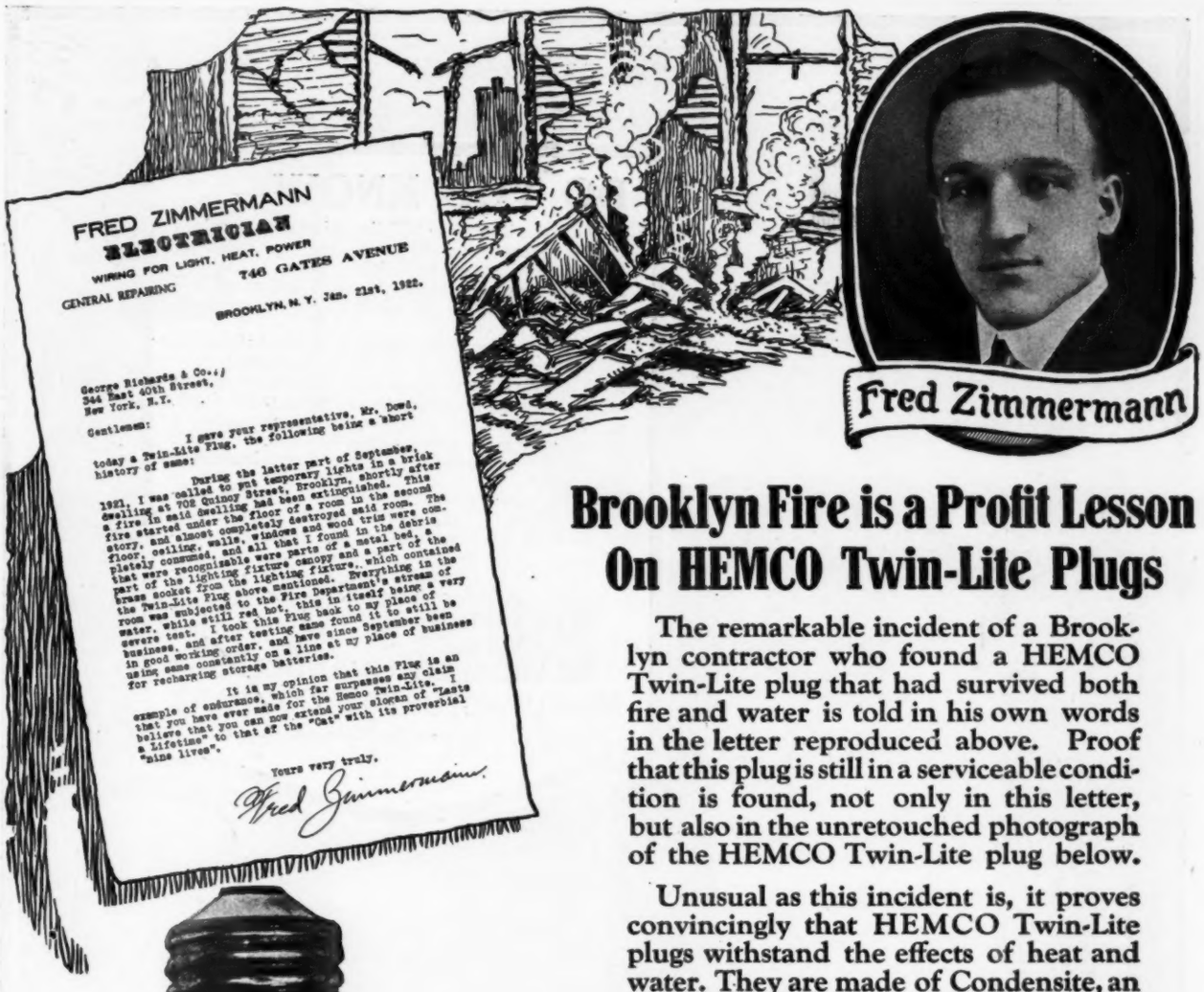
Arrow Convenience Plug Catalog No. 8301

THE ARROW ELECTRIC COMPANY
HARTFORD, CONN.

ELECTRICAL ARROW WIRING DEVICES

ARROW

The complete line of Wiring Devices


FRED ZIMMERMANN
ELECTRICIAN
WIRING FOR LIGHT, HEAT, POWER
GENERAL REPAIRING
746 GATES AVENUE
BROOKLYN, N. Y. Jan. 21st, 1922.
George Richards & Co.,
344 East 40th Street,
New York, N.Y.
Gentlemen:
I gave your representative, Mr. Dowd, today a Twin-Lite Plug, the following being a short history of same:
During the latter part of September, 1921, I was called to put temporary lights in a brick dwelling at 708 Quincy Street, Brooklyn, shortly after a fire in said dwelling had been extinguished. This fire started under the floor of a room in the second story, and almost completely destroyed said room. The floor, ceiling, walls, windows and wood trim were completely consumed, and all that I found in the debris that were recognizable were parts of a metal bed, a part of the lighting fixture canopy and a part of the brass socket from the lighting fixture, which contained the Twin-Lite Plug above mentioned. Everything in the room was subjected to the Fire Department's stream of water, while still red hot, this in itself being a very severe test. I took this Plug back to my place of business, and after testing same found it to still be in good working order, and have since September been using same constantly on a line at my place of business for recharging storage batteries.
It is my opinion that this Plug is an example of endurance, which far surpasses any claim that you have ever made for the Hemco Twin-Lite. I believe that you can now extend your slogan of "Lasts a Lifetime" to that of the "Cat" with its proverbial "nine lives".
Yours very truly,
Fred Zimmermann

Brooklyn Fire is a Profit Lesson On HEMCO Twin-Lite Plugs

The remarkable incident of a Brooklyn contractor who found a HEMCO Twin-Lite plug that had survived both fire and water is told in his own words in the letter reproduced above. Proof that this plug is still in a serviceable condition is found, not only in this letter, but also in the unretouched photograph of the HEMCO Twin-Lite plug below.

Unusual as this incident is, it proves convincingly that HEMCO Twin-Lite plugs withstand the effects of heat and water. They are made of Condensite, an unbreakable molded material, heat and water resistant. When you sell HEMCOS you satisfy customers.

The HEMCO story is told on the HEMCO display stand. Keep this stand in a prominent place. It sells plugs and makes friends for you. Display stands are furnished free of charge. Return the coupon attached at once.

Unretouched photo showing plug in serviceable condition after fire.

HEMCO
TWIN-LITE
HEMCO is on Every Twin-Lite
MADE OF CONDENSITE
WILL LAST A LIFE TIME

GEORGE RICHARDS & CO.

Dept. 24 557 W. Monroe St., Chicago, Ill.

GEORGE RICHARDS & CO.
344 E. 40th Street
New York City

New England Agents
PETTINGELL-ANDREWS CO.
Boston, Mass.

Pacific Coast Agents
GEO. A. GRAY CO.
589 Mission St., San Francisco

Sole Export Distributors
CORNELIUS-SCOTT-SARGEANT, INC.
29 Broadway, New York City

GEORGE RICHARDS & CO.
Dept. 24 557 W. Monroe St., Chicago, Ill.

Please send me your display material on HEMCO Twin-Lite Plugs.

Name .....

Address .....

City ..... State .....

DO YOU KNOW—
1. That the Beardslee "C" line of moderate priced chandeliers and brackets are exceptionally good for a reserve stock?
2. That they are completely wired and assembled and are packed in labeled corrugated cardboard cartons?
3. That you can keep them on stock shelving or feature the carto display shelving?
4. That they are finished in an antique sand blast with polished high lights—a true metallic finish.
5. That the chains, canopies, bodies, arms, husks, etc., are solid heavy gauge brass and that the quality is guaranteed by the Beardslee Trade Mark?
6. That hundreds of dealers are advertising the Beardslee "C" line of Chandeliers and brackets in their local newspapers and turning the inquiries, which the advertising arouses into orders? You can also bring customers to your store. Ask for the complete newspaper advertising campaign and get it started in your local paper.
BEARDSLEE CHANDELIER MANUFACTURING COMPANY
231 S. Jefferson St., Chicago, Illinois
THIS MARK ON ALL CHANDELIERS
TRADE MARK
National Council of Lighting Fixture Manufacturers

P & S 830
Shown Alone

Shell Shade
for Mirror Light

P & S 860

P & S 828
With Frosted
Ball

P & S Outlet Receptacles

For the Modern Bath Room

828 For use with Frosted Ball Lamp

829 For use on Ceilings

830 For use with Side Wall Mirror

860 Keyless for use with Wall Switch

Complete listing Page 82, Catalog 26

Advertising ready to help you to sell
You will be asked for more information—
Write us for Folder

PASS & SEYMOUR, INC.

SOLVAY, N. Y.

Write us today for Folder,
"Porcelain for Service"

New York Boston Philadelphia
Chicago San Francisco

WEBER DEPENDABLE WIRING DEVICES

Did Anyone Ever Get It Through Your Head

Why porcelain sockets have to be constructed and wired differently from brass shell sockets?

THEY DON'T

Weber Porcelain Sockets

Consist of shell, interior and cap (or base) and are wired the same as Weber brass shell sockets; in fact, they are the identical interiors. The interior is first wired in the accepted, sensible way; then the shell is slipped over and secured to the cap.

And the Line is Complete

Six Socket Bodies

Five Switch and Rosette Bodies

Twelve Caps

Sixteen Bases

On your next order for porcelain sockets, specify WEBER.

CONSULT OUR 1921 CATALOG

HENRY D. SEARS

General Sales Agent

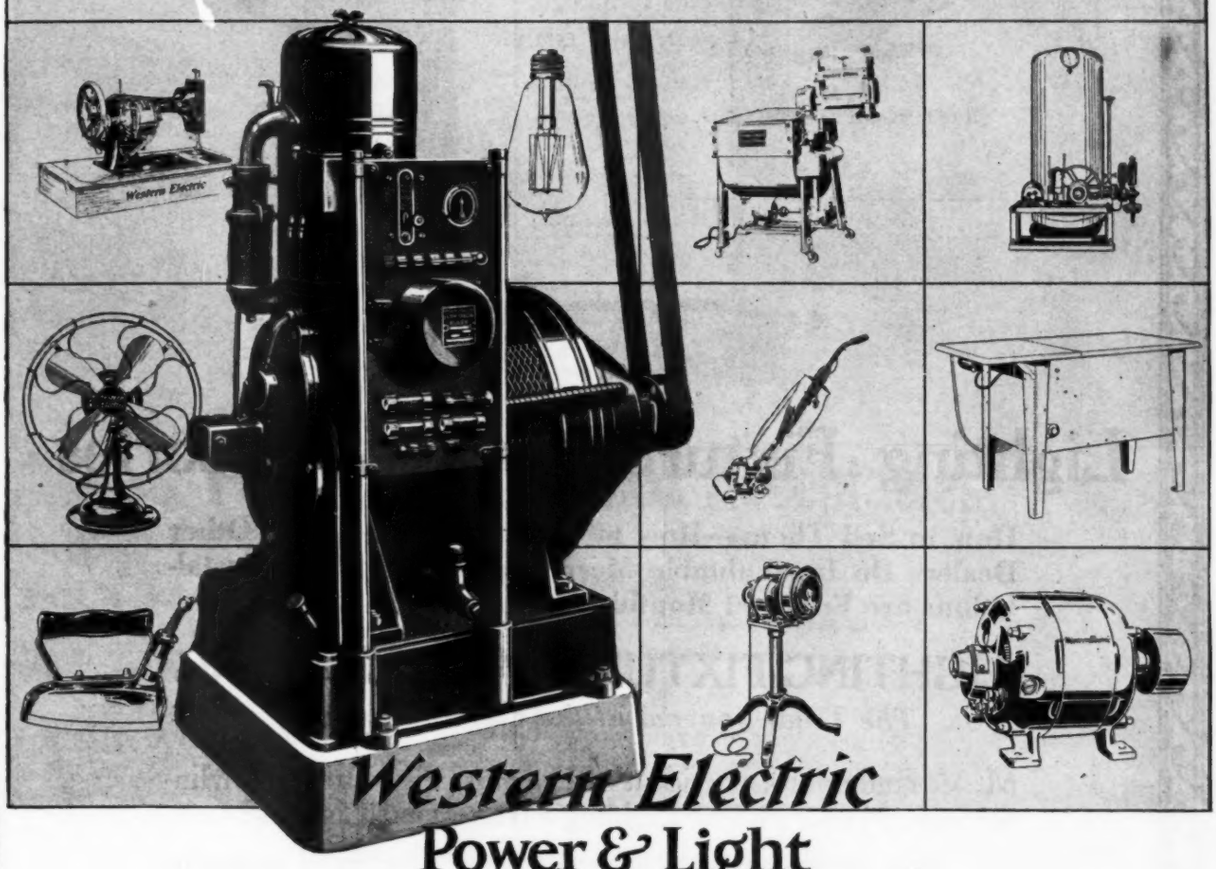
80 BOYLSTON STREET

BOSTON 11, MASSACHUSETTS

SALES REPRESENTATIVES IN

New York Philadelphia Cleveland Chicago
Birmingham San Francisco Los Angeles

Sell more than a Plant — Sell a Complete Line



Western Electric Power & Light

dealers sell this durable and dependable outfit which gives the user electric lights, running water in his house, barn and dairy, and plenty of electric power to do the barn work and the house work.

The same dealers who sell the Western Electric Power & Light Outfit sell the **Western Electric Complete Line** of accessories.

They know that their customers are thus assured of standardized satisfactory service.

Their customers know it too. That is why Western Electric Power & Light dealers have exceptional opportunities to profitably and extensively develop their business.

Men who can sell and want to secure like opportunities, still can obtain desirable territories. Write today!

Western Electric Company

195 BROADWAY, NEW YORK CITY

Lighting Fixtures and Accessories

How to Sell Them—How to Display Them—How Other Dealers Do It—Valuable Merchandising Tips and Installations are Featured Monthly in

LIGHTING FIXTURES AND LIGHTING

The Trade Journal of the Lighting Industry

M. V. Rutherford, President of Progressive Electric Co., Minneapolis, Minn., says of Lighting Fixtures and Lighting:

"Your magazine is the snappiest, most condensed magazine of its kind we have yet had the pleasure of reading. In this business world we have not time to read numerous details. What we want is facts. You are to be congratulated."

If it's good enough for this dealer—if it's just what he wants as an aid in selling more lighting, then LIGHTING FIXTURES AND LIGHTING should be worth $2.00 a year to you.

Subscribe Now—Use the Coupon

Lighting Fixtures & Lighting

The Trade Journal of the Lighting Industry

175 FIFTH AVENUE FLATIRON BUILDING
NEW YORK, N. Y.

TEAR OFF AND SEND NOW!

Lighting Fixtures & Lighting,
1011-1012 Flatiron Bldg., New York:

You may enter our subscription to LIGHTING FIXTURES & LIGHTING for the next twelve months beginning with _____ issue for which we enclose $2.00.

Name _____
Address _____
City _____
State _____
Dec. 1921.

No. 202
OPEN CONTACTS

No. 206
WEATHERPROOF TYPE

"Circle F"

Porcelain Outlet Box Receptacles

Open Contacts

No. 202 For 3" or 3¼" Box, with shade holder groove.
No. 204 For 4" Box, with shade holder groove.

Weatherproof Type

No. 206 For 3" or 3¼" Box, with shade holder groove.
No. 208 For 4" Box, with shade holder groove.

The Porcelain used in these pieces is made in our own potteries, thus assuring first class material.

Write for further particulars on the entire *"Circle F"* line.

E. H. Freeman Electric Company

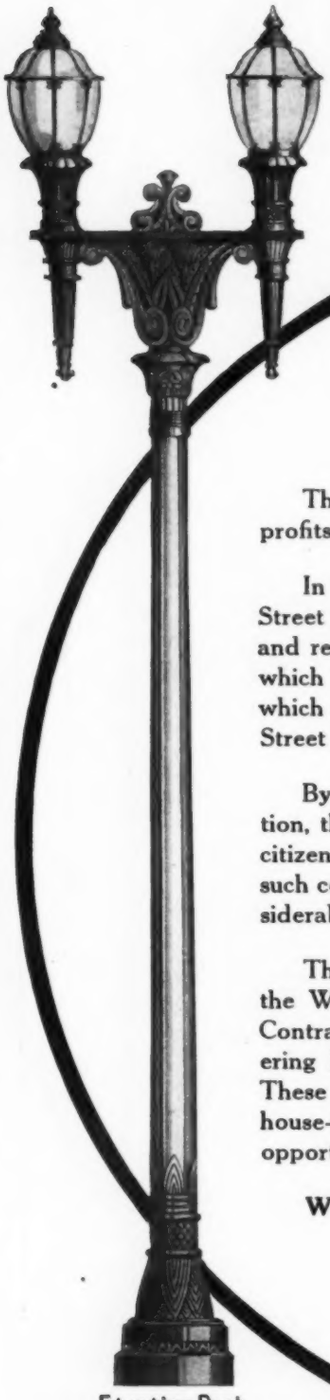
TRENTON, N. J.

GUARANTEED F WIRING DEVICES

GUARANTEED F WIRING DEVICES

Westinghouse-Cutter

Ornamental Posts and Tops



Egyptian Post with Egyptian Senior Tops

Sol-Lux Top with Glass Canopy and Octagonal Casing

Octagonal Reflecto-Lux Top

W WESTINGHOUSE ELECTRIC

The sale of Ornamental Street Lighting offers attractive profits for Contractors.

In addition to attractive profits the sale of Ornamental Street Lighting installations gives new impetus to store and residence lighting, show windows and interior lighting, which seem good enough on poorly lighted streets, but which appear dingy and somber when contrasted with good Street Lighting.

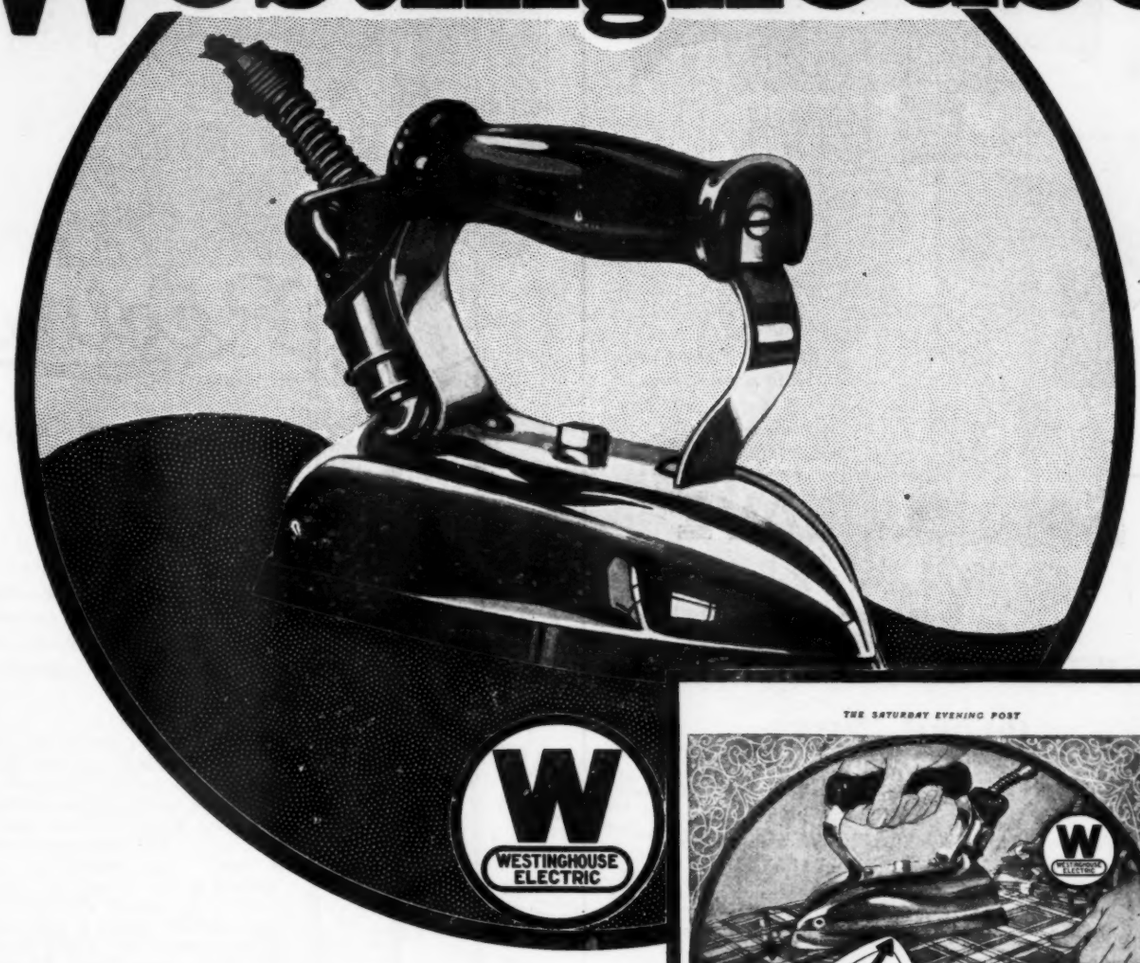
By promoting an Ornamental Street Lighting installation, the Contractor becomes recognized as a public spirited citizen, and builds prestige for himself by the handling of such contracts in connection with which there is always considerable publicity.

The services of the Illuminating Engineering Bureau of the Westinghouse Companies are offered without cost to Contractors in making Reports and Recommendations, covering lighting systems suitable to any local requirements. These services, together with the wide variety of Westinghouse-Cutter Ornamental Posts and Tops offer contractors opportunities to realize handsome profits.

Westinghouse Electric & Manufacturing Company
George Cutter Works—South Bend, Indiana

Westinghouse

Westinghouse



Check This Date!

On **April 22** another forceful full page advertisement on the M Iron will appear, in color, in the Saturday Evening Post.

This publicity is making the M Iron a real leader.

Westinghouse Dealers will benefit by noting this date on their sales calendars and tying-in their displays and advertising at the right time.

The M Iron has all the qualifications that will put it at the top of your list of best sellers—quality, price and the advantages of design.

Feature it prominently and give it a chance to show you its real worth.

Our Agent-Jobbers will help you get the best results—ask their assistance.

THE SATURDAY EVENING POST

See How Big Your Iron Should Be

It may interest you to compare the size of your iron with that of the Westinghouse M-Iron, as shown at the left. Place your iron on the outline and see if it fully covers the area shown. If it does, you may be sure that your iron is of the proper size to work with the greatest speed and the least expenditure of energy.

This takes for granted, of course, that you have found the ironing surface to be properly heated, as it is in the Westinghouse M-Iron.

Look, then, and see if the base of your iron is beveled along the working edge. This is a feature that is extremely desirable. It enables you to do finer work on fussy pieces than is otherwise possible with a standard-weight iron, and also, as thousands of women have found to their great delight, it gives you an unobstructed view of the work, without bending over.

Ask your electrical dealer for the Westinghouse M-Iron, which embodies all the ironing advantages mentioned above, as well as other new and practical features.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY
Offices in all Principal Cities Representatives Everywhere

More Convenience Outlets Make More Convenient Homes

Westinghouse
ELECTRIC APPLIANCES FOR THE HOUSEHOLD

Here is the advertisement that will appear April 22 in the **Saturday Evening Post.** Note how it is constructed to appeal strongly to the women and direct their attention to the superiority of the M Iron.

Westinghouse Electric & Manufacturing Co.

Mansfield Works, Mansfield, Ohio **Sales Offices in All Principal American Cities**

"Spiralweave" is applied to Hazard Wires and Cables where longitudinal strength and great wear resistance is needed, such as—

Tree Wire
Mine Cables
Portable Cables
Mine Shaft Cables

SPIRALWEAVE

WIRES AND CABLES do not "give"

THE longitudinal strength and wear resistance of "Spiralweave" covering on Hazard Wires and Cables is best compared with braided coverings by means of a piece of cloth.

Pull a piece of cloth straight with the warp and it does not stretch—neither do the threads pull apart or open up. Pull the same piece of cloth with the strands running in diagonal or on the bias to the pull, and it stretches easily. The first typifies a Spiralweave covering and the second an ordinary braided covering.

The "Spiralweave" covering of Hazard wires and cables does not stretch or "give" because the warp threads run lengthwise with the wire, while the filler threads run spirally around the wire, making a tough and flexible covering.

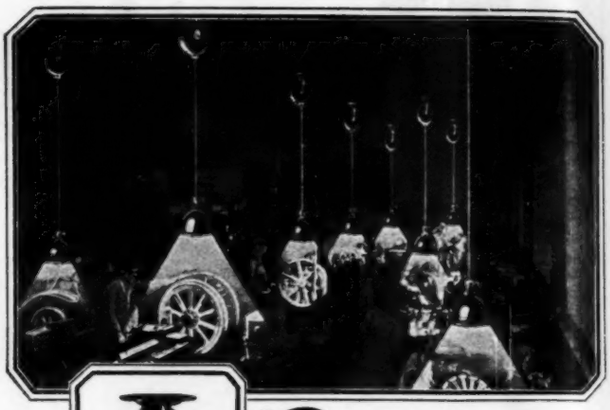
Hazard Manufacturing Co.

NEW YORK 533 Canal St.
PITTSBURGH 2213 First Nat'l Bank Bldg.
CHICAGO 552 W. Adams St.
BIRMINGHAM 1701 First Ave.
DENVER 1415 Wazee St.

WILKES-BARRE, PA.

HAZARD RUBBER INSULATED Wires & Cables 1812 1912

Makers of Quality Wire Rope since 1848



Reelite

REG. U.S. PAT. OFF.

Drop Cord Type

GOOD local lighting demands light from the proper direction. The Reelite is the ideal flexible industrial lighting-unit and is suitable for large or small installations. Flexible lighting is the modern and efficient method, and its advantages will be immediately appreciated by all.

The Reelite permits instant adjustment of the distance of the light unit with respect to the work. The Reelite is particularly adapted for use over work benches, tables, or machines. The ordinary drop cord is very often unsatisfactory and lighting results do not properly take care of the varying character of the work, which makes it impossible to pre-determine the exact height of the light source above the working plane. The Reelite permits instant adjustment of the distance of the light unit with respect to the work Standard reflectors may be used with this Reelite. The Reelite may be instantly raised or lowered as required—it's just like raising or lowering a window shade.

CONSTRUCTION: Black enameled reel-unit, 5½-inch diameter with base for attaching to 3-inch Outlet Box. Can also be furnished for a 4-inch Outlet Box if specified. The reel contains 12 feet of approved portable cord, and can be furnished with either brass shell or porcelain key socket.

Write for Booklet NE-307.

APPLETON ELECTRIC COMPANY

Successors to
ANDERSON ELECTRIC & EQUIPMENT COMPANY
General Offices and Factory:
1704 Wellington Avenue at Paulina
CHICAGO

Mac says:—

"Howdy! Let me introduce you to **DURADUCT.** It sure tickles me to hear all the nice things the Contractors say about it."

They say you can fish long lengths through it without having the insulation on the end of the wire turn back and bunch up badly, as it does with some kinds. It's an all-year-round Loom, for hot and cold weather. It doesn't crack or blister.

That Single Wall Construction and the real Roller-bearing Wireway is what makes them like **DURADUCT.**

It certainly makes a fellow happy to handle a Quality product like **DURADUCT**

F. M. MacDuffie

The smile on Mac's face isn't altogether because of that 6 months' old girl at home.

A fellow can't help but be happy selling a Quality product like DURADUCT.

TUBULAR WOVEN FABRIC CO.

PAWTUCKET, R. I.

National Association of Electrical Contractors and Dealers

Officers

NATIONAL CHAIRMAN, James R. Strong, 526 W. 34th Street, New York City.

SECRETARY AND TREASURER, Farquson Johnson, 15 West 37th Street, New York City

GENERAL COUNSEL, Franz Neilson New York City.

SPECIAL REPRESENTATIVE, Laurence W. Davis 15 West 37th Street, New York City

Executive Committeemen

ATLANTIC DIVISION

W. Creighton Peet, 70 East 45th Street, New York City.

G. M. Chapman, 43 E. Main Street, Waterbury, Conn.

A. J. Hixon 246 Summer Street, Boston, Mass.

J. F. Buchanan, 1719 Chestnut Street, Philadelphia, Pa.

P. H. Jaehnig, 109 Bank Street, Newark, N. J.

H. P. Foley, 806 12th St., N. W., Washington, D. C.

CENTRAL DIVISION

G. M. Sanborn, 309 N. Illinois Street, Indianapolis, Ind.

A. Penn Denton, 17th and Oak Streets, Kansas City, Mo.

J. A. Fowler, 10 S. Second Street, Memphis, Tenn.

Robley S. Stearnes, 336 Camp Street, New Orleans, La.

J. E. Sweeney, 303-305 W. 4th Street, Waterloo, Iowa.

A. L. Abbott, 182 E. 6th Street, St. Paul, Minn.

CANADIAN DIVISION

R. A. L. Gray, 85 York Street, Toronto

C. H. E. Williams 509 Richard Street, Vancouver

PACIFIC DIVISION

E. H. Eardley, 54 Exchange Place, Salt Lake City, Utah

Executive Committeemen at Large

L. G. Ross, 1305 Tower Ave., Superior, Wis.

L. S. Lamont, 9 So. Clinton Street, Chicago, Ill.

Jas. R. Strong, 526 W. 34th Street, New York City

Past Presidents of the National Electrical Contractors' Association

Charles L. Eidlitz----1901-1903
Ernest McCleary----1903-1905
James R. Strong----1905-1908
Gerry M. Sanborn---1908-1910
*Marshall L. Barnes--1910-1912
Ernest Freeman----1912-1914
John R. Galloway----1914-1916
Robley S. Stearnes---1916-1918
W. Creighton Peet---1918-1920

*Deceased.

COMMITTEE CHAIRMEN

ARCHITECTS
R. A. L. Gray
85 York St., Toronto, Can.

CENTRAL STATIONS
A. J. Hixon
246 Summer Street Boston, Mass.

CODE
A. Penn Denton
17th and Oak Sts., Kansas City, Mo.

CONVENTIONS AND MEETINGS
Jas. R. Strong
526 W. 34th St., New York City

COST DATA
A. L. Abbott
174 E. 6th Street, St. Paul, Minn.

CREDIT AND ACCOUNTING
J. E. Sweeney
303-305 West 4th St., Waterloo, Iowa

ENGINEERS
E. H. Eardley
54 Exchange Pl., Salt Lake City, Utah

HOUSEWIRING
J. F. Buchanan
1719 Chestnut St., Philadelphia, Pa.

JOBBERS
W. Creighton Peet
70 E. 45th Street, New York City

LEGISLATION
H. P. Foley
806 12th St., N.W., Washington, D.C.

LIABILITY INSURANCE
J. A. Fowler
10 S. Second Street, Memphis, Tenn.

MANUFACTURERS
G. M. Sanborn
309 N. Illinois St., Indianapolis, Ind.

MEMBERSHIP
G. M. Chapman
43 E. Main Street, Waterbury, Conn.

MERCHANDISING AND INDUSTRIAL DEVELOPMENT
L. H. Lamont
9 So. Clinton St., Chicago, Ill.

PUBLICATION
Paul H. Jaehnig
109 Bank Street, Newark, N. J.

STANDARDIZATION
L. G. Ross
1305 Tower Ave., Superior, Wis.

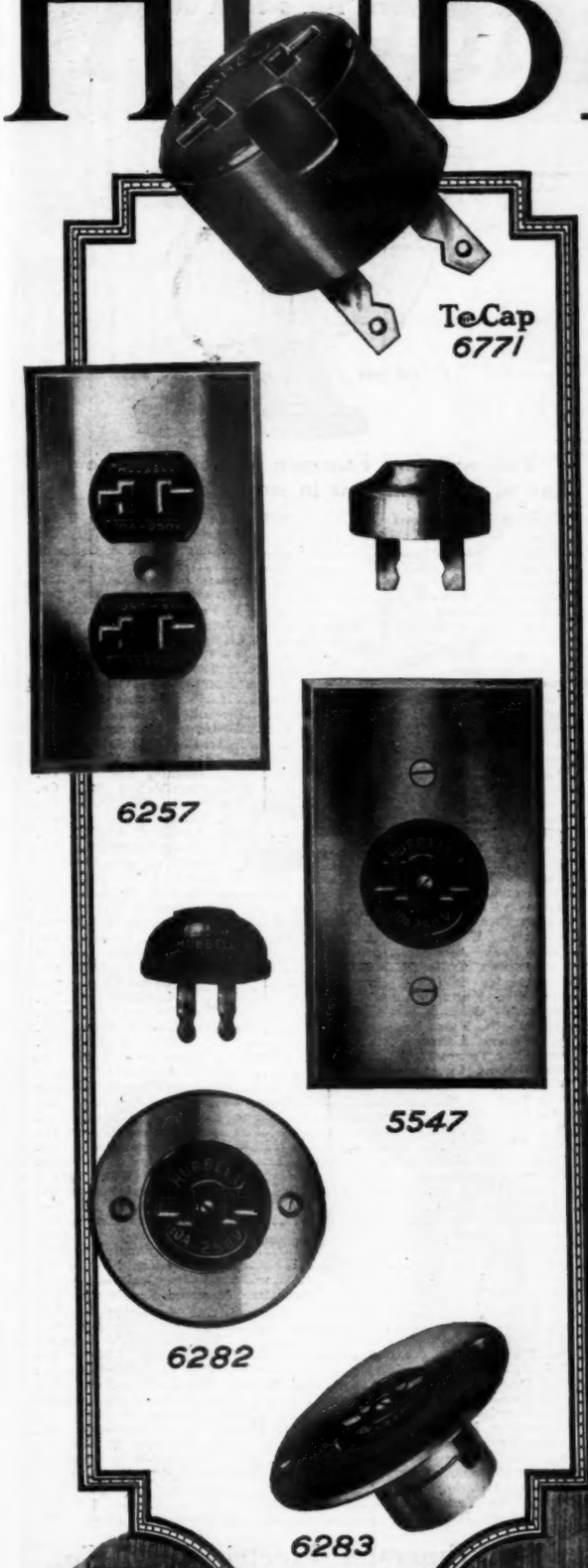
UNIVERSAL DATA AND SALES BOOK
J. A. Fowler
10 S. Second Street, Memphis, Tenn.

U. S. CHAMBER OF COMMERCE
Robley S. Stearnes
336 Camp Street, New Orleans, La.

ANNUAL CONVENTION, CINCINNATI, O., OCTOBER 11, 1922. EXECUTIVE COMMITTEE MEETING, OCTOBER 9, 1922

UMI

HUBBELL



Meet *all* their Electrical Requirements

Te-Cap The only current tap for Convenience Outlets. Has either parallel or tandem blades. Supplies current direct to one appliance, and carries Te-Slots taking any standard plug cap.

Convenience Outlets

with Hubbell Te-Slots for every room in the house. Bodies fit standard outlet boxes. Easily installed. Replace present single outlets with our "Duplex" 6257.

"3193"

Current Tap For Lighting Fixtures

Standard size pull socket; 3/8" shell cap; Te-Slot side outlet, taking any standard cap. Chain controls light only. Socket fits standard shade and shade holders. Put one in every room.

Write for circulars imprinted with your name

HARVEY HUBBELL INC
ELECTRICAL SPECIALTIES
BRIDGEPORT CONN. U.S.A.

£236-U

ELECTRICAL SPECIALTIES

Absolute Confidence in

Century

Fractional Horsepower

Repulsion Start Induction

Single Phase Motors

1-8 H.P. and larger

Accounts for their ever increasing popularity among large users of small motors.

They develop an average starting torque of not less than 350 per cent. of full load torque.

At the same time the average starting current is less than 300 per cent. full load current which means less voltage disturbance on lighting circuits.

They come up to speed very quickly under full load.

They can be easily started at a distance by a single throw switch or automatically by means of float or pressure controlled switches, etc.

The liberal design and accurate construction helps them to Keep-A-Running.

Temperature rise not more than 40° Cent.

Other sizes up to 40 H. P.

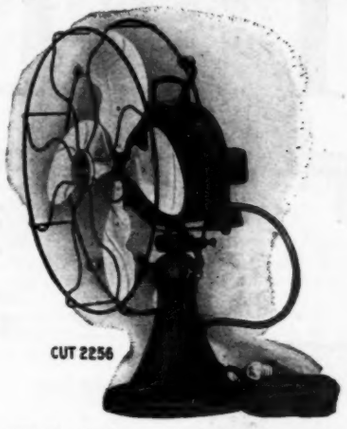
CENTURY ELECTRIC CO.

St. Louis, Mo. U. S. A.

SALES OFFICES IN PRINCIPAL CITIES

Emerson Fans

THE FANS WITH THE 5 YEAR GUARANTEE



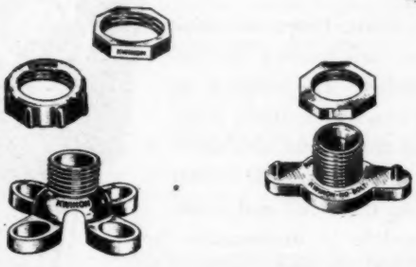
You will find Emerson Junior and the full line of Emerson fans in stocks of:—

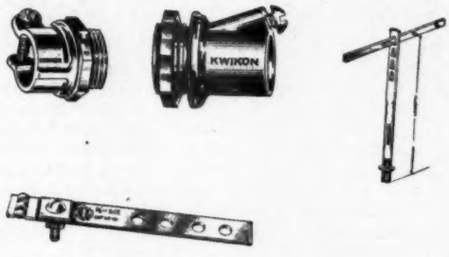
Aberdeen, South Dakota	McLaughlin Electric Supply House
Atlanta, Georgia	Southern Electric Supply Co.
Baltimore, Maryland	Walter E. Hill & Company
Beaumont, Texas	Neches Electric Co.
Birmingham, Alabama	Interstate Electric Co., of Ala.
Birmingham, Alabama	Robertson Supply Co., Inc.
Boston, Massachusetts	R. V. Pettingell Elec. Sup. Co.
Buffalo, New York	Johnson-Wahle Electric Co.
Chicago, Illinois	Electric Appliance Company
Cincinnati, Ohio	The Post-Glover Electric Co.
Cleveland, Ohio	The Elliott Electric Co.
Clinton, Iowa	Mississippi Electric Co.
Columbus, Ohio	The Electric Sales Co.
Dallas, Texas	Electric Appliance Company
Davenport, Iowa	Mississippi Electric Company
Davenport, Iowa	Tri-City Electric Sup. Co.
Dayton, Ohio	The Post-Glover Electric Co.
Des Moines, Iowa	Downing Electrical Co.
Detroit, Michigan	McNaughton-McKay Elec. Co.
Detroit, Michigan	Miller-Seldon Electric Co.
Duluth, Minn.	Marshall-Wells Company
Duluth, Minn.	Duluth Electrical Supplies Co.
Evansville, Indiana	Boetticher-Kellogg Co.
Homer, New York	John S. Maxson Company
Houston, Texas	Barden Electric & Machinery Co.
Huntington, West Virginia	Emmons-Hawkins Hardware Co.
Kansas City, Missouri	Funsten Electric Co.
Kansas City, Mo.	Independent Elec. Machinery Co.
La Crosse, Wisconsin	W. A. Roosevelt Co.
Little Rock, Arkansas	Treadway Electric Company
Los Angeles, California	California Hardware Co.
Los Angeles, California	Woodill & Hulse Electric Co.
Louisville, Kentucky	Peaslee-Gaulbert Co., Inc.
Mansfield, Ohio	The Hartman-Spreng Co.
Minneapolis, Minn.	Northland Electric Supply Co.
Montgomery, Alabama	Loeb Hardware Co.
Nashville, Tennessee	Southern Incandescent Lamp Co.
New Orleans, La.	Electric Appliance Company
New Orleans, La.	Interstate Electric Company
New York, N. Y.	Manhattan Electrical Sup. Co., Inc.
New York, N. Y.	Monroe Lamp & Equipment Corp.
New York, N. Y.	Parr Electric Co.
New York, N. Y.	Nugent Electrical Supply Co.
Omaha, Nebraska	Granden Electric Co.
Omaha, Nebraska	Wright & Wilhelmy Co.
Peoria, Illinois	United States Electrical Supply Co.
Philadelphia, Pa.	Elliott-Lewis Electrical Co., Inc.
Pittsburgh, Pa.	Iron City Electric Co.
Portland, Oregon	Marshall-Wells Company
Providence, Rhode Island	Union Electric Supply Company
St. Joseph, Mo.	American Electric Co.
St. Louis, Mo.	Commercial Electrical Supply Co.
St. Louis, Mo.	Manhattan Electrical Supply Co., Inc.
St. Louis, Mo.	Peerless Lighting Co., Inc.
St. Louis, Mo.	Shapleigh Hardware Co.
St. Paul, Minn.	Electric Supply Company
St. Paul, Minn.	Olson-Boettger Electric Co.
Salt Lake City, Utah	The Salt Lake Hardware Co.
San Diego, California	Electric Supplies Distributing Co.
San Francisco, California	Electric Appliance Company
San Francisco, California	Baker, Hamilton & Pacific Co.
Shreveport, La.	Interstate Electric Co. of Shreveport, Inc.
Sioux Falls, South Dakota	Tri-State Electric Co.
Spokane, Washington	Marshall-Wells Company
Toledo, Ohio	The Toledo Electric Sales Co.
Toronto, Ontario, Canada	McDonald & Willson, Ltd.
Utica, New York	Porter Electric Co., Inc.
Washington, D. C.	Doubleday-Hill Electric Co.

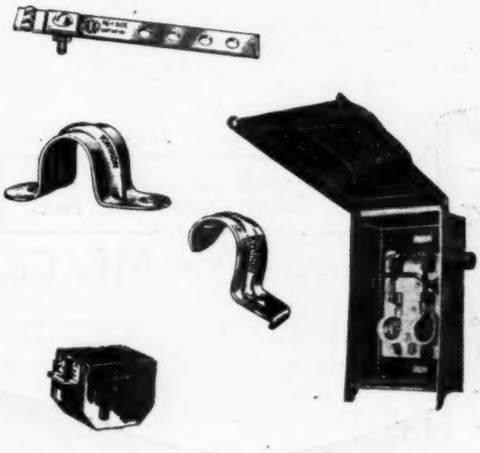
The Emerson Electric Mfg. Co.

2018 Washington Ave., St. Louis, Mo.

50 Church St., New York City







For finishing work our Kwikon line offers a full, complete line of plug and cartridge fuse cutouts and flush receptacles. These products are also unsurpassed in quality of construction and practicability of design. To use them once is to demand them always.

CONDIT FITTINGS KwikoN TRADE MARK REGISTERED A MARK OF QUALITY **WIRING DEVICES**

Now you save most by using Kwikon Conduit Fittings and Wiring Devices.

Every Kwikon product is a time and labor saver. Each one is especially designed not only to do its work better, but to permit of easier and quicker installation as well.

The utmost care is taken in their manufacture and production. You will find no bad threads, misfits or other faults in Kwikon materials.

And remember, Kwikon products cost no more (often less) to buy than other standard makes. There is a double saving when you use them. To fully appreciate the extent of this saving order KWIKON by name from your supply jobber today.

S. R. FRALICK & CO.

15 S. CLINTON ST. CHICAGO, ILL.

"FLEXSTEEL"

Armored Conductors Conduit & Fittings

14-2 Double Strip

14-2 Single Strip

Flexsteel Conduit

FLEXSTEEL CONDUITS AND CONDUCTORS

No matter how severe a strain is put on FLEXSTEEL Conduit and Conductors, the walls will not open. All conduit and conductors are "opposed channel" construction to meet extreme bending possibilities and to give the greatest flexibility, and when bent always stay put and in place. The flat interior makes fishing easy in the conduit, while our own Liberty Rubber Covered Wire is used for the conductor in the armored conductors. Distinguishing braids on each conductor permit certain and quick identification of polarities. The strip is annealed and electro-galvanized.

FLEXSTEEL FITTINGS are designed especially to take FLEXSTEEL, but will also fit other makes of Conduit and Armored Conductors. Both single and Duplex connectors are manufactured.

No. 2163

No. 2175

NATIONAL PRODUCTS
NMMC

National Metal Molding Co.
Pittsburgh, Pa.

UNION "Union" Renewable Fuses do not arc and here's why

No matter how slight the overload, every blow-out of a "Union" Renewable Fuse is complete. The gap left in the very *center* of the fusible element is so clean-cut and wide that *arcing is absolutely impossible.*

Ordinary links frequently fuse at only one end, leaving the element suspended. The result is an arc with gases which leave a deposit on the nearest nut and screw and often even fuse the metal parts, making it difficult and sometimes impossible to disassemble the fuse. An arc, as every electrician knows, exerts a highly destructive action on the fuse casing.

Arcing and electro-metallic deposit cannot occur in "Union" Renewable Fuses because the *entire center of the link melts completely and leaves a wide space which absolutely prevents arcing even on slight overloads and low voltage shorts.* Neither can the metal parts fuse, for they are too far from the center of link to be injured.

This is only one of a number of exclusive features that make "Union" the easiest and quickest fuse to renew.

"Union" Fuses, both Renewable and Non-Renewable, in all capacities, both 250 and 600 volt, have the highest approval of the National Board of Underwriters.

Leading electrical jobbers and dealers everywhere sell "Union" Fuses.

New 96 page catalog on request.

The "Union" saves more than ANY other renewable fuse.

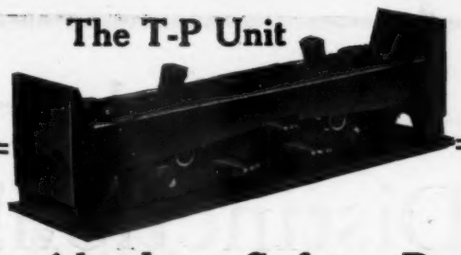
Chicago Fuse Mfg. Co.

Manufacturers of Switch and Outlet Boxes, Cut-Outs, Fuse Plugs, Automobile Fuses, Renewable and Non-Renewable Enclosed Fuses

Chicago **New York**

'UNION' RENEWABLE FUSES

The T-P Unit



An Absolute Safety Panel with One Door Construction

THE T-P is the first sectional constructed panel board to give absolute safety with a one door opening.* The T-P unit is one complete piece carrying both switches and fuses inside the barrier pieces. The barriers completely cover and conceal the terminals. This makes a board that is absolutely dead face when the branch switches are off, and perfectly safe at all times.

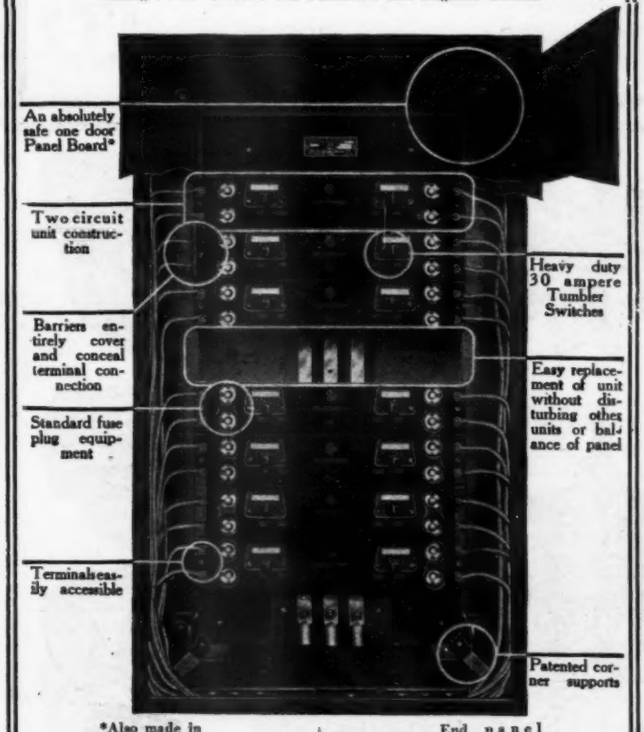
That is but one of the T-P Triumph Panel Board features. Of greater importance is the effective design and oversize construction that means long life; greater dependability; quick replacement of parts; standardization of manufacture, specification and installation that saves time, and therefore money, all along the line.

You will want the new T-P Bulletin No. 26 for immediate use or for your files—gladly sent upon request.

Frank Adam Electric Co.

ST. LOUIS, MO.

District Offices: Detroit, Minneapolis, New York, Dallas, Kansas City, Cincinnati, Chicago, New Orleans, San Francisco, Los Angeles, Seattle.


An absolutely safe one door Panel Board*
Two circuit unit construction
Barriers entirely cover and conceal terminal connection
Standard fuse plug equipment
Terminals easily accessible
Heavy duty 30 ampere Tumbler Switches
Easy replacement of unit without disturbing other units or balance of panel
Patented corner supports

*Also made in standard two door construction

End panel covers main lugs (top or bottom)

NEW FA TRIUMH PANEL BOARD

SPRAGUE

DURABLE Wiring Materials

Everything for the complete WIRING SYSTEM

BX (flexible steel armored conductor).
Flexible Metallic Conduit.
Greenfielduct (galvanized rigid conduit).
Sprageduct (black enameled conduit).
Spraguelets (Universal conduit bodies).
Outlet Boxes and **Fittings**

SPRAGUE ELECTRIC WORKS

Of General Electric Company

Main Offices 527 W. 34th St. New York

Branch Offices in Principal Cities

RAVEN CORE—A Rubber Covered Wire of Distinction!

Made by a house of standing.

Specified by all the leading architects.

Used by the Contractors who do the better grade of work.

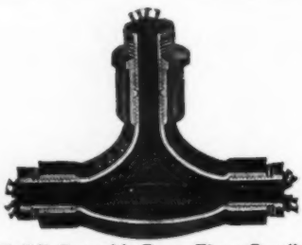
Can you afford to overlook it?

NEW YORK INSULATED WIRE CO.

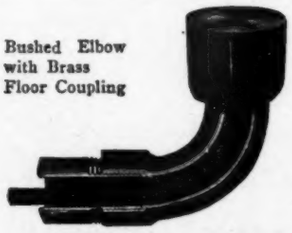
Main Office: NEW YORK *Factory:* WALLINGFORD, CONN.

Agencies and Branches:

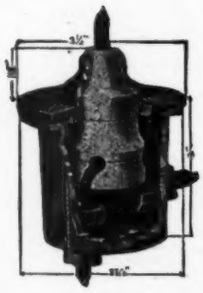
DENVER SAN FRANCISCO CHICAGO BOSTON



"Bulb" Tee with Brass Floor Coupling



Bushed Elbow with Brass Floor Coupling



A Few of the New Fittings Shown In Our New Catalog

DID YOU GET ONE? IF NOT, WRITE US

THOMAS & BETTS CO.

63 Vesey Street New York, N. Y.

Chicago Office: 612-626 W. Jackson Blvd.

W. J. DOHERTY, Mgr.

Closed View

Type "C" Switches Externally Operated

30-200 Ampere Inclusive

Open View

High-grade line of punched clip switches in regular high finish type A box made from Armco Ingot Iron.

We have just completed a line of externally operated switches we consider the best buy on the market today.

There is not a cheap thing about them. The switches are the heaviest, most carefully aligned and adjusted punched clip switches to be found.

They are placed in the same boxes as our Type "C" switches. Lists are very low.

This line does not supersede our Type A switch line—that still should be used largely in industrial plants. It represents an addition to the line.

Discounts are same as our regular safety switches. It would pay every jobber's salesman carefully to study this proposition.

The Trumbull Electric Manufacturing Co.

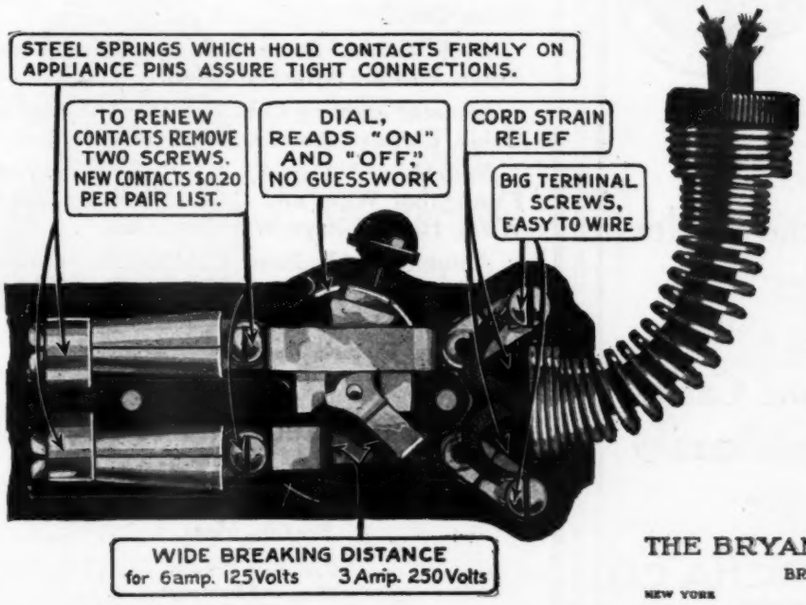
PLAINVILLE, CONN.

San Francisco New York Philadelphia Chicago

Bryant No. 651 Appliance Switch Plug

This Bryant quality Switch Plug fits practically all heating appliances, is needed in every home and every laundry, and is packed in attractive display cartons to make it easy to sell.

A carton on your counter will sell quickly and bring you a good profit. The plug itself will make friends for you. List price $0.80, Schedule H2, Standard Package 50, Carton 10. Immediate Delivery.


STEEL SPRINGS WHICH HOLD CONTACTS FIRMLY ON APPLIANCE PINS ASSURE TIGHT CONNECTIONS.
TO RENEW CONTACTS REMOVE TWO SCREWS. NEW CONTACTS $0.20 PER PAIR LIST.
DIAL, READS "ON" AND "OFF." NO GUESSWORK
CORD STRAIN RELIEF
BIG TERMINAL SCREWS, EASY TO WIRE
WIDE BREAKING DISTANCE
for 6amp. 125Volts 3 Amp. 250 Volts

Order from your distributor

THE BRYANT ELECTRIC COMPANY

BRIDGEPORT, CONNECTICUT

NEW YORK CHICAGO SAN FRANCISCO

STANDARD

THE PRODUCTS marketed under this trade name and trade mark have back of them a guarantee consisting of over 40 years of successful service.

¶ They include Bare and Insulated Wires and Cables of all kinds and sizes and for every class of service, also Cable Accessories of all kinds.

¶ They are sold at a price which, quality considered, is as low as the lowest.

¶ Why not use STANDARD Wire on your next job?

Standard Underground Cable Co.

Boston Washington Atlanta Philadelphia Los Angeles Seattle
Chicago Pittsburgh Kansas City New York Detroit
San Francisco St. Louis Salt Lake City
For Canada: Standard Underground Cable Co. of Canada, Limited, Hamilton, Ont.

DEPENDABLE SAFETY INSULATIONS

Insulated wire and cable for every transmission purpose—not made to meet a price, but with the idea of rendering maximum service to the purchaser and of reflecting maximum credit to the contractor who uses it.

Safety Insulated Wire and Cable Co.

114 Liberty Street
NEW YORK

BISHOP

RUBBER INSULATED
WIRES AND CABLES

RUBBER INSULATED TRADE BISHOP MARK WIRES AND CABLES

PRODUCTS:

Lead Encased Cables
Armored Submarine Cables
Flexible Cables
Railway Signal Wire
Car Wire and Cables
Automobile Lighting, Starting and Ignition Cable

BISHOP GUTTA-PERCHA CO.
420 E. 25ST, NEW YORK

We Manufacture:—

Rubber Covered Wire—Solid Conductor, Stranded Conductor, Flexible Conductor, Extra Flexible Conductor.

Lamp Cords, Reinforced Cords, Heater Cord, Brewery Cord, Canvasite Cord, Packing-house Cord.

Deck Cable, Stage Cable, Border Light Cable, Flexible Armored Cable.

Elevator Lighting Cable, Elevator Operating Cable, Elevator Annunciator Cable.

Switchboard Cables, Telephone Wire, Flameproof Wires and Cables, Railway Signal Wires, High Voltage Wires and Cables.

Automobile Ignition Cables, Automobile Lighting Cables, Automobile Starting Cables, Automobile Charging Cables.

Moving Picture Machine Cable.

Boston Insulated Wire & Cable Co.

Main Office and Factory:
Dorchester District
Boston, Mass.

Canadian Branch Office and Factory:
Hamilton, Ont.

RUBBER INSULATED WIRES AND CABLES

National Electrical Code Standard

Intermediate (Red) Thirty Per Cent.

Wire built under the direct supervision of experienced engineers, skillfully and honestly manufactured with one purpose and result.

Continuous Service

A-A WIRE CO., Inc.,

General Sales Offices: 50 East 42nd Str.
New York City

Branch Office:
The Sloan Building,
Cleveland, Ohio.

Factory:
Newark, N. Y.

SCHWARZE CYCLONE BELLS

A Quality Product at LOWER PRICES

Approved by The Underwriters' Laboratories

FOR OPERATION FROM

Battery

110 Volt D. C.

Transformer

110 Volt A. C.

Write for Bulletin and Price Sheet

MANUFACTURED AND DISTRIBUTED BY

SCHWARZE ELECTRIC COMPANY

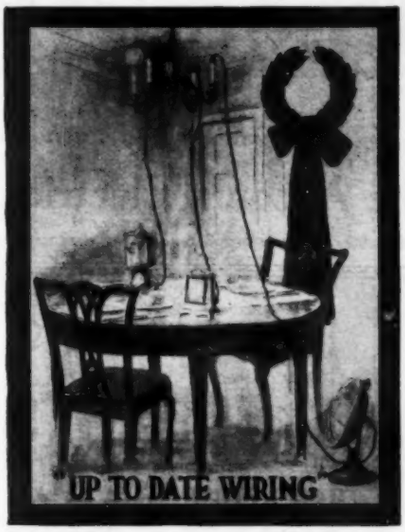
Adrian, Michigan

BRANCH OFFICES:

1444 Park Place, DETROIT, MICH.
515 Market St., SAN FRANCISCO, CALIF.
422 1st. Avenue, PITTSBURGH, PA.
627 W. Jackson Blvd., CHICAGO, ILLINOIS
629 Wesley Roberts Bldg. LOS ANGELES, CALIF.
1215 Filbert St., PHILADELPHIA, PA.
915 Metropolitan Life Building, MINNEAPOLIS, MINN.

Mr. Contractor-Dealer---

Does this familiar "cut" represent your idea of "Up-to-date Wiring"?



Let's hang the "crepe" on this kind of a wiring job.

What are you doing to convince the architects and owners of the economy and advantages of doing the job *right* by providing more "convenience outlets"? The chandelier must go into the discard as a medium for supplying current to electrical devices.

No. 401 Floor Outlet with Nozzle | **Improved Switch Box** | **No. 477 Floor Outlet Non-Adjustable**

More *Floor Outlets, Receptacles,* and *Switch Boxes* must be installed, if current consuming devices are to be used daily as necessities, instead of ornaments or occasional luxuries.

Write for Catalog 33-E and souvenir pencil with "thick lead"

Steel City Electric Co.

1207-1223 Columbus Avenue
PITTSBURGH, PA.

WE MANUFACTURE

SHIELD BRAND

WEATHERPROOF, SLOW BURNING, ANNUNCIATOR, OFFICE AND MAGNET WIRES AND CABLES

ACME, EUREKA and WIZARD IRON and WOOD BOX BELLS and BUZZERS

Annunciators and Push Buttons. *"Daisy" Floor Treads*

The Ansonia Electrical Company, Ansonia, Conn., U.S.A.

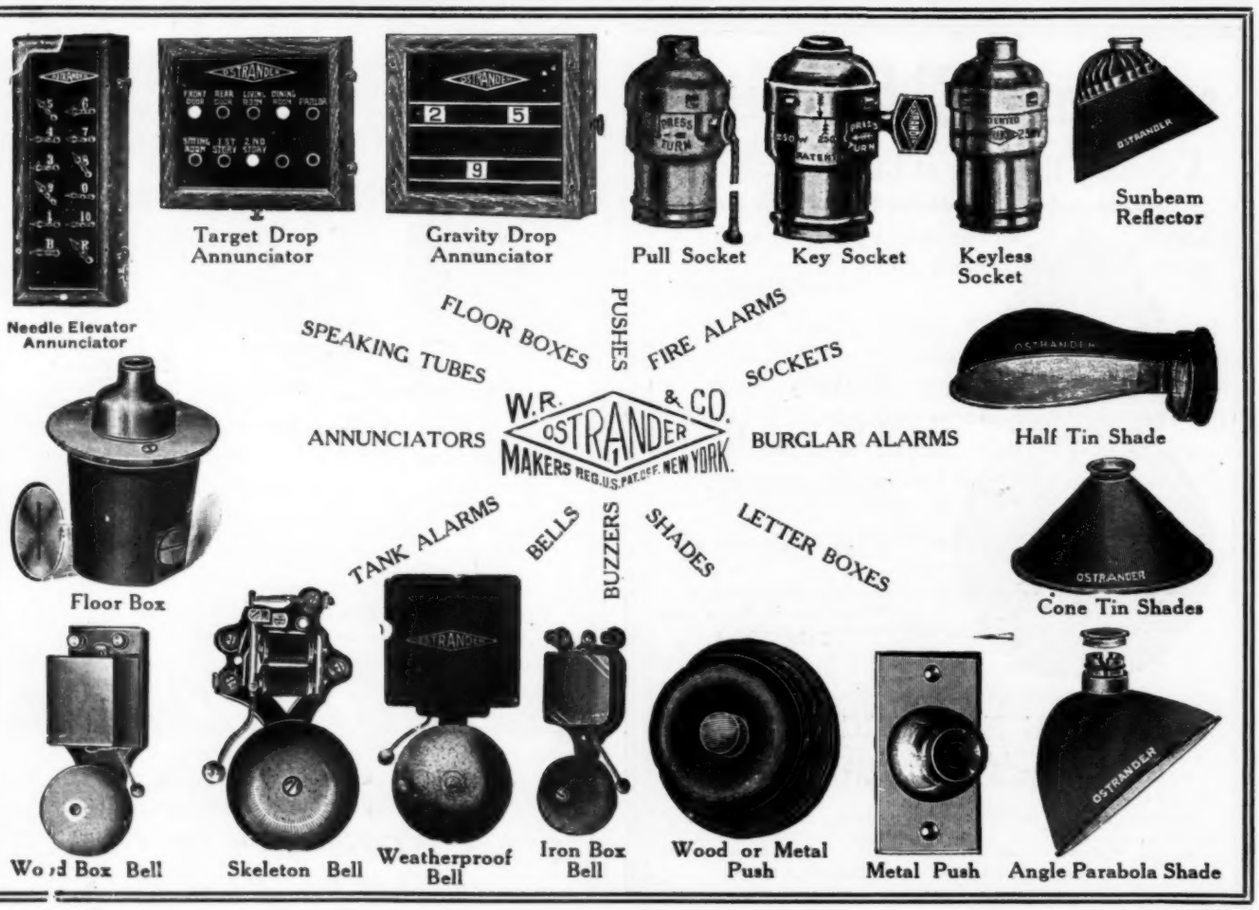
Every Thing from Generator to Lamp

H. C. ROBERTS ELECTRIC SUPPLY CO.

PHILADELPHIA, PA.
1101-5 Race Street

Cor. W. Water & N. Franklin Sts.
SYRACUSE, N. Y.

ELECTRICAL SUPPLIES **AUTOMOTIVE EQUIPMENT**



P. S.=S. P.

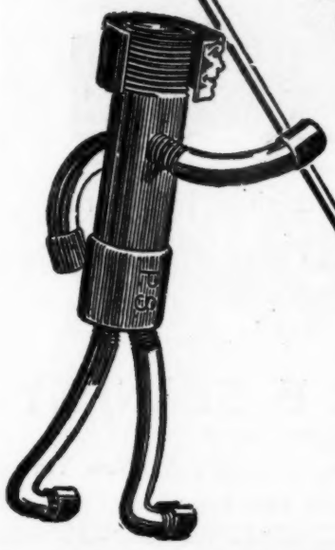
SURE Profits with Pittsburgh Standard on the job. A fact which comes home to you when you use it.

Reaches the job ready to install—a feature that means profit by time saved. Eliminates reversing couplings and running dies over pipe ends—tedious work eliminated.

The original cost is no more than that of ordinary enameled conduit, but the time it saves on the job from start to finish makes it more profitable and less expensive.

Patented Thread Protectors keep threads sharp, true and clean—with just enough enamel to protect from rust.

PITTSBURGH
THREAD PROTECTED
ENAMELED CONDUIT
STANDARD
PATENTED



ENAMELED
PITTSBURGH, PA.
METALS CO.

"DIAMOND H"

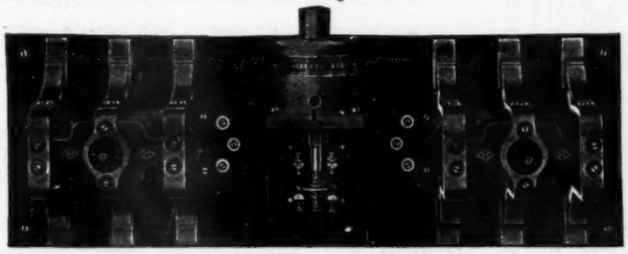
REMOTE CONTROL SWITCHES
LAMINATED BRUSHES
IRONCLAD MECHANISM
SELF CLEANING CONTACTS

FOR ALTERNATING CURRENT

TRADE H MARK

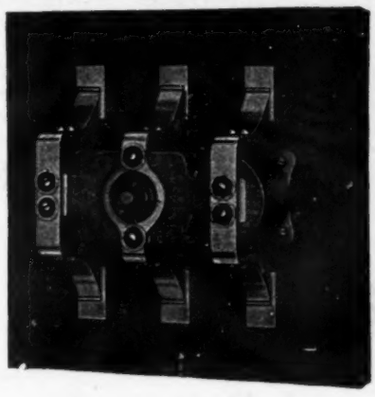
FOR DIRECT CURRENT

DOUBLE POLE—THREE POLE—FOUR POLE



Double Throw Combination

For two sources of supply with common load. Transfers automatically upon failure of one source.



Type "F" 3-Pole Back Connected Remote Control Switch

Double Pole TYPE "F" **Triple Pole**

Catalog Number	Ampere Capacity	List Price	Catalog Number	List Price
730	30	$36.00	790	$43.20
740	60	48.00	800	54.00
750	75	60.00	810	67.20
760	100	93.60	820	108.00
770	150	108.00	830	124.80
780	200	122.40	840	139.20

Write for Catalogue and Discount Sheet

Made by

THE HART MANUFACTURING CO.
HARTFORD, CONN.,
U. S. A.

The 100% Electrician Says:

"I can make connections in a jiffy with the

Sherman Fixture Connector

Sherman Fixture Connectors are all brass—assuring high conductivity. The screws can't come out—that saves time. They are simple—you can't get the wires in the wrong place. You need no acid, solder or blow torch—a tight connection is always assured.

Send for FREE sample of the Sherman Fixture Connector and try it. They are sold by all progressive jobbers.

Approved by the Underwriters

When the manufacturer of Electric Fixtures equips his products with Sherman Fixture Connectors he improves his product and accommodates you. INSIST.

H. B. SHERMAN MFG. CO.
BATTLE CREEK MICHIGAN

Knu Canopy Insulator

Approved by Underwriters' Laboratories

Can be applied to canopy without the use of tools

in rolls of 10 *feet.*

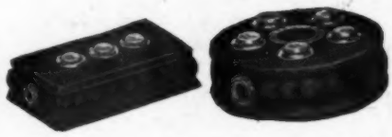
ARTHUR F. STANLEY

SELLING AGENT

West & Hubert Sts. **New York**

Telephone 5200 Canal

Altman Desk Push



Mahogany
Oak

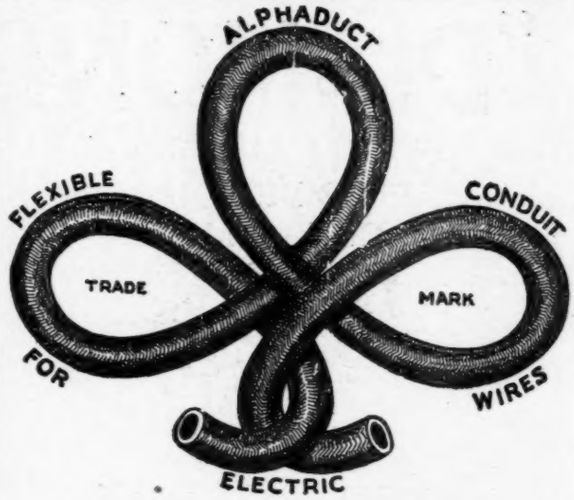
Round, Rectangular and the Rectangular with Name Plate

DISTRIBUTING AGENCIES:

H. R. Stivers, 136 Liberty St., New York.
S. H. Stover Co., Cham. of Com., Pittsburgh.
A. D. Fishel Co., Illum. Bldg., Cleveland, Ohio.
J. T. Pearson Co., Dime Bank Bldg., Detroit.
White & Converse, Met. Life Bldg., Minneapolis, Minn.
A. F. Douglas, 104 Prefontaine Place, Seattle, Wash.

MINERALLAC ELECTRIC COMPANY

1045 Washington Blvd., **Chicago, Ill.**



ALPHADUCT COMPANY

SALES AGENCIES:

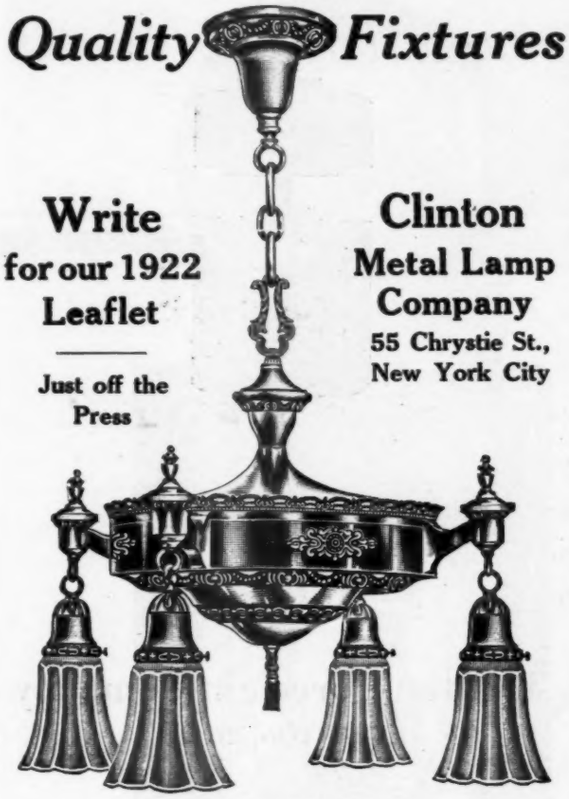
Boston,	S. B. Condit, Jr., & Co.
New York	Wm. S. Brown Electric Co.
Philadelphia	L. P. Clark
Baltimore	Electrical Sales Co.
Atlanta	C. S. Broward
Pittsburgh	S. H. Stover
Detroit,	McNair Electric Sales Co.
Chicago,	Wm. P. Crockett Co.
St. Louis,	Wm. P. Crockett Co.
Dallas,	R. S. Wakefield
Denver	B. K. Sweeney
San Francisco	H. B. Squires Co.

Quality Fixtures

Write for our 1922 Leaflet

Just off the Press

Clinton Metal Lamp Company
55 Chrystie St.,
New York City



No. 6915. Spread 23 in.—Brownstone

DISTRIBUTOR GE PRODUCTS

Fan Season

will soon be here

Write today for our
1922 GENERAL ELECTRIC FAN PROPOSITION

Order your stock early!

THE PHILADELPHIA ELECTRIC COMPANY SUPPLY DEPT.
130-132 South Eleventh Street
Philadelphia

PARANITE

RUBBER COVERED WIRES AND CABLES
THE STANDARD FOR THIRTY YEARS

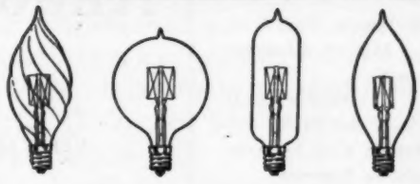
For all purposes. Inside, Outside, Aerial, Underground and Submarine Use.

IF IT'S **PARANITE** IT'S RIGHT

INDIANA RUBBER & INSULATED WIRE CO.
JONESBORO, INDIANA

New York Representatives:
The Thomas & Betts Co.,
63 Vesey St. New York City

Chicago Branch:
Indiana Rubber & Insulated Wire Co.
210 So. Desplaines St., Chicago



Hygrade
CANDELABRA

Another type in the complete Hygrade line.

Four attractive bulbs for candle lamps, sconces, and similar fixtures which use small lamps for decorative purposes.

Made with the same engineering skill and thorough workmanship that has always characterized Hygrade Lamps.

Licensed under the Tungsten Lamp Patents of the General Electric Co.

HYGRADE LAMP CO
GENERAL OFFICE AND FACTORY SALEM MASS

Safe All 'round

BECAUSE of their rugged construction, superior quality and dependability, Trenton Standard Porcelains have for years enabled the most exacting workman, through their use, to set standards of workmanship for others to work toward.

CAN MORE BE SAID?

No. 1 Jiffy
None Better—Just Try Them

Trenton Porcelain Company
TRENTON, N. J.

NEEDLE ANNUNCIATORS
Hotel, House, Car
Marine, Elevator
Automatic
Self-Restoring
Individual Set-Back
Return Call Systems
Telephone Systems
Fire Alarm Systems
Hospital Systems
Apartment House
Systems
Etc., Etc.

Annunciators and *Electrical* House Goods

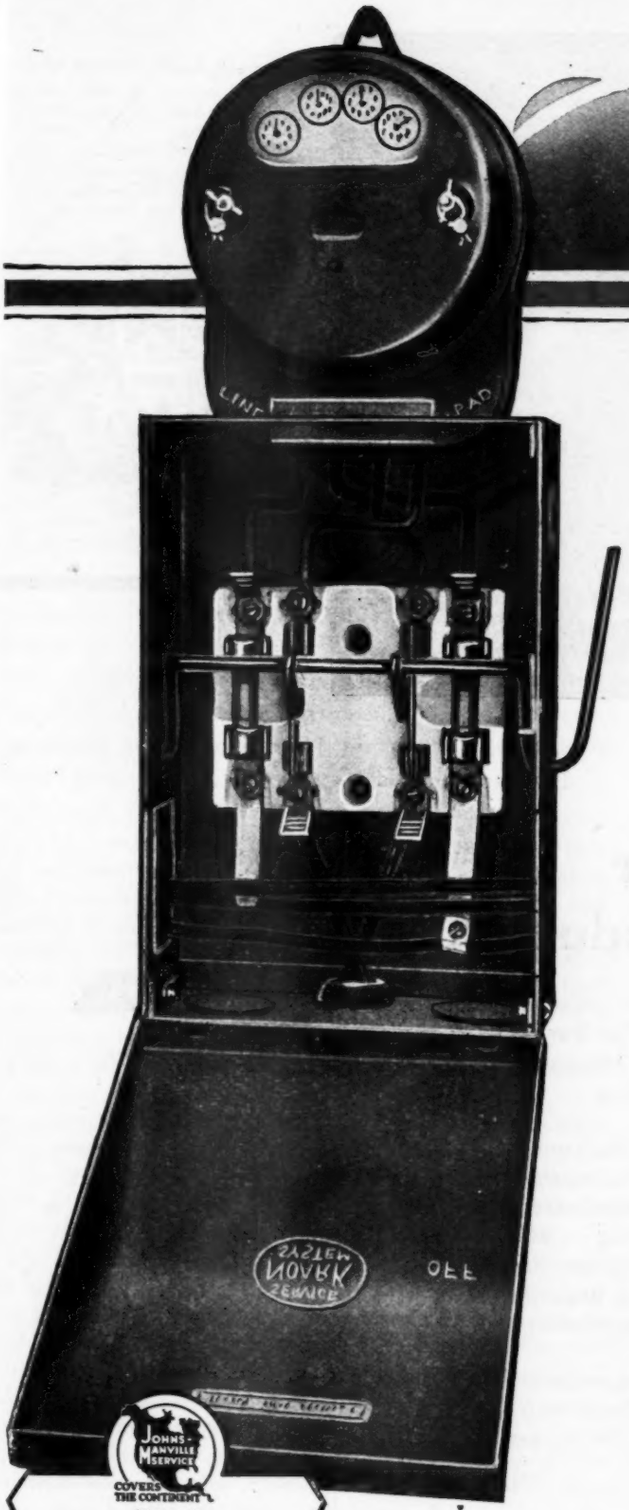
Manufactured by
PARTRICK & WILKINS CO.
Established 1867

51 N. Seventh Street, Philadelphia

Our Annunciators and House Goods in Stock and for Sale by Dealers Everywhere

To the ELECTRAGIST:

Who carries your Liability Insurance? The National Association can save you money on this. Write to Headquarters for full information.



Service installations are easy now

THE simple installation of one Noark Service System unit now provides complete service entrance equipment including:

1. An enclosing cabinet.
2. A safety service switch.
3. A service cut-out.
4. A meter connecting and testing device.
5. A "lockoff" for disconnecting service.

All the elements of the Noark Service System are standardized and interchangeable with the standardized devices of other large electrical manufacturers. Standard accessories can be supplied to make load side fuses accessible.

Noark Service Systems may be used with any type meters, singly or in groups. They are used exclusively in many districts.

Knockouts are provided for practically any arrangement of the installation. Group installations may be connected by detachable troughs, greatly lessening the labor of wiring.

Noark Service System devices are stocked by recognized trade distributors. Write for a booklet.

JOHNS-MANVILLE Inc.
Madison Avenue at 41st Street, New York City
Branches in 59 Large Cities
For Canada: Canadian Johns-Manville Co., Ltd., Toronto

Through
ASBESTOS
and its allied products
Electrical Materials
Brake Linings
Insulations
Roofings
Packings
Cements
Fire Prevention Products

JOHNS-MANVILLE
ELECTRICAL MATERIALS

A New Market for An Old and Tried Product

Electrical dealers can broadcast some good news to the thousands of owners of wireless telephone and telegraph sets. The Tungar battery charger puts an end to the annoyance and expense of taking storage batteries to a service station for charging.

Connected to any alternating current lighting circuit the Tungar charges the battery quietly, quickly and at a small cost for current. An overnight charge once or twice a month will keep the battery in perfect condition, lengthening its life and increasing its efficiency. An added selling point for the Tungar is that it can also be used for charging automobile starting and lighting batteries and to furnish direct current for a variety of electrical experiments.

The Tungar will be promoted this year by extensive advertising in radio papers. It is dependable, easy to sell and offers a satisfactory profit. Ask our nearest office or distributor for further information.

Five Amp. Tungar Battery Charger

Charges one 6-volt lead cell battery at 5 amperes, one 12-volt battery at 3 amperes or one 18 volt battery at 1.5 amperes.

There is also a 2 amp. size which will charge a 6-volt battery at 2 amperes, or a 12 volt battery at 1 ampere.

General Electric Company

General Office Schenectady, N.Y.

Sales Offices in all large cities

35A-69

THE RESOLUTION

Whereas, There is need of words to designate our business and activities; and

Whereas, It is proper that we should deliberately add to our vocabulary such properly derived words as are required; now therefore, be it

Resolved, That the following words be adopted as recognized by us with the meanings attached:

NATIONAL ELECTRAGIST

FORMERLY ELECTRICAL CONTRACTOR-DEALER

(Trade Mark)

Official Journal of the
National Association of Electrical Contractors and Dealers

THE NEW WORDS

Electragy—Name of the trade or business of Electrical Contractor-Dealer.

Electragist—A person conducting such a business.

Electragician—A person working at the business.

Electragize—A verb—to work at the business—or to provide electrical equipment.

Electragic—An adjective—relating to the business.

Electragian.

Electragial.

Publication Office: 11 Liberty St., Utica, N. Y. *Editorial and Business Offices: 15 West 37th St., New York City*

Volume 21 APRIL, 1922 *Number 6*

Good Times Movement

Attention cannot be directed often enough to what is being done in the way of preliminary work by the Business Development Committee of the National Electric Light Association.

This preparatory work is not of interest solely to members of the N. E. L. A. It is of paramount importance to electragists, and the entire electrical industry is to be beneficially affected when the tentative program becomes active. In a larger sense the committee is working toward a purpose which is to make possible a Good Times Movement which will include many other business interests of such character as to assure a natural stimulation of general business and resultant better conditions.

Business interests centering in the building industries, such as plumbing, hardware, lumber, paint, and all kindred trades, can strengthen the effort and contribute toward a unified success by local team work and organization.

Part of the present plan is to secure the endorsement and coöperation of local newspapers and the trade press, also the national press associations. The United States Chamber of Commerce through its influence on local Chambers can aid in development. A conspicuous feature is the endorsement of government officials who have signified their interest in various phases of the proposed plans.

The electrical industry should contemplate with just pride the position it holds in a national movement of such business importance. Its function at present—and let us all endeavor to maintain it in the future—is to lead in the organization of a campaign which will instill into the public a feeling of confidence that there is now a commercial stability and a willingness to purchase.

It is most emphatically urged that every member of the National Association of Electrical Contractors and Dealers keep himself fully conversant with the work being done toward this end, and that he consider himself an important cog in the wheel of its progression. So strongly should he feel this that he should hold himself in readiness to actively participate. Even more, he should endeavor at once to secure all information that the Business Development Committee can offer him and to formulate tentative plans of his own so that he may become a leader among other leaders.

Get into the officers' training camp now and do not wait to be drafted in this bloodless but significant war for a revitalization of American commercial life!

This intention, together with a feeling of cogency in the minds of all electragists, will build for a potency which should alacrify business to better than the socalled pre war period. Be of the influential and not of the influenced.

That Recodification Committee

The self complacent, noncommittal aura which surrounds those members of the subcommittee on recodification of the National Electrical Code with whom we have discussed the matter, compels the conviction that something really is doing in this relation.

It is rumored that within a very few weeks enough of the tentative revisions will have been prepared to go to a vote before the subcommittee. If at that time the scheme of the revision is approved, the complete draft of the proposed new Code ought not to be long delayed.

The NATIONAL ELECTRAGIST will continue to keep on the alert to procure the earliest possible public pronouncement on this subject which is of such vast importance to electrical contractor-dealers.

Radio, the Limitless Area

It was an astounding feat of the time when, during the Revolution, a chain was stretched across the Hudson River to prevent the passage of enemy boats. The laying of the Atlantic cable under the sea was the marvel of its day and the messages that it carried were the greatest triumphs of electricity.

Then came the almost unbelievable telephone, electric light, the automobile, and so many other miracles of applied electricity that we moderns were stupified with the rush of progress—so much so that we hardly do more than blink when the most amazing of them all is mentioned—radio.

Those of us who know nothing of it seem to think it is too complicated to tamper with—while those of us who know considerable about it realize that we practically know nothing of it as yet.

Who can answer the question: What is the future of the wireless? Who can foresee what will develop from a power

which carries voices over the earth and over the sea without a visible medium?

It is far easier to predict a commercial future for its continuance. In a late discussion one opinion held—that scientifically, yes; but radio as a concrete business proposition, no; it could not go far, the apparatus being too expensive for the masses to purchase for amusement. Controversially it was stated that only a few years had passed since the same argument was used about the phonograph industry—two hundred dollars was too large a first cost, and then there was that bugbear, the upkeep—the continual expenditure for records. The speaker went on to say that present statistics of the Victrola people would throw considerable white light on what the public spends for home amusement.

An approximate estimate shows that within a radius of a hundred miles in and about New York two million dollars has been spent by amateurs. Most of these have only the receiving apparatus and now are content with the entertainment as provided by the broadcasting stations. How long will it be before each operator will want additional equipment for the sending of radiograms?

The recent installation of a radiophone in the White House will act as an incentive for a first purchase to a large number. President Harding's request that formal Government action be taken to regulate radio broadcasting will only be a further stimulus to the trade. The American, boy and man, usually want what is hard to get.

It is largely due to the boy that radio has come into such general use, and while he is constructive, it must not be forgotten that the boy is also very destructive and that delicate radio instruments are not fool proof. Everything points to a prodigious growth of sales.

Although the radio has been used by amateurs strictly for amusement and perhaps still is, the tremendous increase in sales in the last four months—all manufacturers are reported to be over sold at present—indicate that it will be but a short time before its users will evolve plans for personal financial gain from radio.

Therefore, dealers ought to give a thought to carrying, or adding to whatever radio stock may now be carried.

Radio once more denotes the fact that there is no limit to the elasticity of the electrical business.

Undeveloped Water Power

The United States Geological Survey has recently released a most comprehensive report on developed and potential water power in the United States. This subject is of vital importance to the electragist, as it is to any man whose business it is to sell electric power or any commodity going into the creation, transmission, or use of that power.

This report furnishes information which ought to eliminate any pessimism from the thought of electragists, as such a showing of undeveloped natural resources for the operation of electric power in all parts of the United States should energize the entire industry to a feeling of renewed confidence that the industry is still in its infancy and that the business possibilities of the future are greater and broader than the past has ever shown them to be. How can there be stagnation in an industry when nature herself shows an inexhaustable means for its continuous activity?

A table in this report shows that at present there are in the United States more than three thousand water power plants of a hundred horsepower or more, with a total capacity of installed water wheels amounting to almost eight millions of horsepower. Of this total, about eighty percent are in public utility plants, and slightly more than twenty percent are in manufacturing plants.

It is of interest to note that in the state of New Jersey the potential minimum table shows a capacity of forty-four thousand horsepower, or only about a sixth of one percent of that of the potential minimum in the entire United States.

New Jersey has a potential maximum of more than a hundred thousand horsepower, but in the statement of the developed water power the capacity of water wheels installed in plants of a hundred horsepower or more, there is shown to be only about seventeen thousand horsepower in use. This is utilized by but thirty plants in all, ten of which are public utility and municipal, using about half of the total amount, and the other twenty, devoted to manufacturing and miscellaneous uses, taking up the other half. On the minimum estimate this shows more than a fourth of the horsepower wasted, and something like four-fifths of the maximum estimated horsepower not utilized.

The state of Pennsylvania, with a much larger area, has a potential minimum of almost three hundred thousand horsepower, with a maximum of more than twice that amount, and yet in that state there is developed less than one fourth of the estimated resources.

The report shows that it is the general practice in the construction of water power plants to install machinery capable of utilizing stream flow far in excess of the absolute minimum. This also is said to be much in excess of the flow used in determining the minimum potential water power as given in the tables of the survey.

If all the water power of this country were to be developed, as has been done in some of the New England States, it would probably be necessary to install plants having three or four times the capacity of the estimated minimum potential water power as given.

A comparison of these facts should prove to be a great stimulus for a restoration of business vigor. They certainly form a substantial basic argument for electrical installation in all manufacturing plants in every available water drained section.

Study Lighting Conditions

There is an authentic story told of the exact amount in dollars that it cost a manufacturer in a prominent city because his operatives were always looking up from their work. His factory windows overlooked tracks on which suburban trains were constantly carried, and as each train passed, the operatives almost involuntarily looked up. This perhaps took only a small portion of their time to be sure, but on discovering the condition and estimating the aggregate loss of time each week, this manufacturer changed his clear window glass for opaque, with the result of a material increase in output in the same number of labor hours.

All factories are not so fortunately equipped as was this one with direct window lighting. This being the case, and without a proper lighting service, there frequently is inefficiency and unconscious discontent among factory hands, which is caused by shadow, glare, and general eye fatigue. All such conditions tend to slow down the product.

It would hardly seem necessary to suggest after having this thought in mind, that every electragist could speed up

his business by getting out on a personal canvas of his immediate locality. He could go through every neighboring commercial plant and show how to improve improper factory and shop lighting conditions.

Even in this post benighted, so to speak, well lighted period, there is still a wide scope for the enterprising electragist wherein he can show the recalcitrant consumer how to improve consumer conditions with a relatively small consumer outlay.

Mix up terms as one wills—power outlay, fixture cost, consumer usage, appliance upkeep—this electrical business is the greatest interchangeable, non-untwistable, interlocking, and mutually entangling fusion of interests that the business world has ever seen. Each branch is like a bit of color on a cubistic canvas—each form complete in itself and yet an integral part of the whole composition, no one of which functions without all the others. Each and every one is a relative help in demonstrating a message sent out to the world at large, that the one time seemingly obscure power of electricity is now practically ready for perfect action, and conforms to the hand of every seeker for his immediate service.

Not Good Psychology

We are learning to pay more and more attention to the method of approach, whether in selling goods or undertaking conferences. It is somewhat startling, therefore, to note the throw-back of one of the editors of the electrical press in an effort to effect a change in the phraseology of fire insurance policies.

No issue can be taken with the suggestion that policies should be changed in such a manner as to eliminate the prohibition of electricity—a prohibition which is lifted by the pasting on of a flyer permitting electricity if a certificate of the equipment has been issued. But when, speaking for all the industry, he complains of "the Prussian hand of the underwriter," it is questioned whether he is so authorized to speak, and whether he really means what he says or merely makes talk in order to attract attention to the article itself, which is not without merit.

We all recall a versatile Chicagoan, at present as in the past much in the public eye, who deliberately invented "hell and Maria" and other peppy phrases of profanity in order to attract public attention. It may be that "the Prussian hand of the underwriters" is intended to be an imitative phrase, and that its inventor will be found to be a delightful, quiet gentleman who has written thus out of excess of enthusiasm rather than excess of facts.

Keeping Tabs on Credit

As J. H. Tregoe, Secretary of the National Association of Credit Men has recently pointed out, credit is not of itself a value, but is a representative of value. He also says, "When speaking of inflated credit the quantitive measurement does not always apply and the real test of inflated credit is whether the underlying value has been consumed."

When buying merchandise on credit terms, this credit should be extinguished before the goods are sold. A man may be financially responsible for the debt, but so long as there is no underlying value to the credit itself, just so is that credit dangerous and tends to inflation, despite the financial abilities of the debtor.

The Standard Accounting System of the National Association is a self evident gauge by which the electragist may readily see just where he stands and so be able to avoid transactions which lead to financial disturbances.

Getting New Business Via the Radio Route

By M. W. Thompson

Advertising Manager of De Forest Radio Telephone & Telegraph Co. of New York City Tells Why Electragists Should Get in This Profitable Game Now

Back in 1919 a radio telephone transmitter was installed in a theatre in San Francisco for the broadcasting of music, news, and lectures. By so doing practically a new industry was started. Prior to that time the radio field had been confined to three hundred thousand radio enthusiasts and perhaps two thousand dealers in radio equipment and supplies.

Last year broadcasting stations were put up one after another at Pittsburg, Newark, Springfield, Mass., Chicago, and Roselle Park, N. J., until today we have six flourishing high power radiophone broadcasting stations and close to fifty smaller but highly efficient plants at such points as Washington, D. C., Cleveland, Detroit, Atlanta, Denver, Houston, Tex., Kansas City and Los Angeles.

Nightly famous opera stars send their voices out over thousands of miles of space to be picked up by hundreds of thousands of listeners. News which would not otherwise be generally known until read in the morning papers, is sent out by human voice on the far flung waves of wireless and received the evening before. Jazz bands play at these stations and dances are enjoyed in scores of homes and halls many miles away.

Children going to bed in hundreds of homes located in many states have a bedtime story told them by professional story tellers. The action of beautiful operas is told in an interesting way, interspersed frequently with the music which for years delighted only those fortunate enough to be able to attend these classical performances. Football games, boxing matches, and baseball battles are followed play by play by all who possess radio receiving sets. Owners of radiophone receivers now number close to 800,000.

Electragists Are Logical Distributors

Now who is the logical distributor of radio equipment to the general public? The salesman of radio equipment should know something of electricity—volts, amperes, watts, ohms, and insulation. The store carrying radio apparatus should also carry wire, insulators, ground clamps and batteries.

So the retail organizations best fitted to sell radio equipment are the electragists. They know electrical supplies and terms; they carry many parts used in wireless work; they know the jobbers from whom additional supplies can be obtained.

And many electrical contractors and dealers are awake to this new line. A window is set aside for the display of wireless sets and parts. A counter carries tuning coils, condensers, head receivers, transformers and detectors. Shelf space behind this counter is reserved for stock. The chief difficulty is keeping any stock on hand. It cannot be done so great is the demand for either complete sets or parts from which a man can build his own.

Many electragists, however, hesitate about installing a radio department on the grounds that they know nothing about wireless. Let us see what the average set is composed of.

Equipment Needed for Various Sets

For receiving radio signals sent either by code or by voice only six distinct things are necessary:

First: One or more wires elevated from the ground and insulated from it to form what is termed the aerial or antenna upon which the radio waves are caught. These wires may be either bare or insulated, of copper, aluminum or phosphor bronze, and from 40 to 150 feet long. The wires are insulated from the ground by placing an insulator at the end of each. A lead in is connected at one end of the wire or connected to one end of all wires if more than one is used.

Second: A means of varying the natural frequency of the receiving circuit to correspond with that of various transmitting stations. This is done with one or more tuning coils made in one of three ways: of a single layer of wire on a tube 'about three inches in diameter; of many layers wound in what is called honeycomb fashion on a short tube; or of two spherical structures of wire, one of which revolves within the other and known jointly as a variometer.

Tuning for Finer Adjustment

Third: A means of making an even finer and more accurate adjustment of the circuits than is possible with the tuning coils alone. For this purpose one uses a condenser. Semi circular plates of aluminum are mounted on three pillars and separated about 1/8 inch by small washers. Another battery of semi circular plates, slightly smaller in size are mounted on a shaft and also separated 1/8 inch. The two groups of plates are then fastened in such relation to each other that the plates of the second group can be swung between the plates of the first group but not touching them.

Fourth: A means of changing the frequency of the incoming signals from radio frequency (30,000 to 6,000,000 per second) to audible frequency (1 to 30,000 per second) so that they may be heard. This is done with a detector which may be either of two types—crystal or vacuum tube. A detector also rectifies, its output to the head telephone receivers being in the form of direct current impulses.

Fifth: A means of changing the direct current impulses into sound waves. For this we use two small head receivers held on the head by means of a headband.

Sixth: A suitable connection with the ground in order to complete the aerial circuit. This is called the "ground" and is usually accomplished by connecting a wire to a water pipe by means of a ground clamp.

Radio Game Easy to Play

We find nothing radically new to the average electrical man in radio. The same electrical laws and materials are used. The circuits and construction of apparatus are the only new features.

Now as to the receiving sets themselves. These vary considerably both as to design and construction and as to price. There are three types of tuning equipment: single layer coils, honeycomb coils, variometers. There are two types of detectors: galena crystal and vacuum tube. There may or may not be amplifiers to increase the volume of sound. The sets are sold sometimes without head receivers, batteries or tubes, and often completely equipped. The cheapest sets made by reputable radio manufacturers consist of a tuning coil, crystal detector, fixed condenser and a pair of head receivers. The range from existing broadcast radiophone stations is about 50 miles.

The next size contains tuning coil vacuum tube detector, rheostat, two batteries (one know as the A battery, the other as the B battery), head receivers, and antenna materials. The range is 125 to 300 miles under normal conditions.

Composition of Larger Sets

We then come to larger sets containing more complicated but more efficient tuning apparatus, vacuum tube detector, and one or two steps of amplification. Such sets are usually sold without tubes, batteries, receivers or coils and the dealer of radio equipment purchases these accessories from their manufacturers.

Vacuum tubes, batteries and receivers are not made by the same concerns that build sets, just as automobile tires, batteries and speedometers are not made by the car makers. One thing should be borne in mind: a loud speaking horn that enables a roomful of people to hear the radio concerts cannot be attached to a set comprising only tuning equipment and a detector. Amplifying apparatus must be present to increase the signal strength sufficiently to operate the loud speaker. The

Have One or More Sets Always in Operation So the Public Can Listen in—This Kind of Sales Talk is Most Convincing

larger sets completely equipped range much higher in price.

The electrical store is the place the public naturally thinks of as a place to purchase radio supplies, as radio is of course inseparably connected with electricity. The best way to get into the game of selling wireless sets and supplies would be this: Writes to The Wireless Press, 326 Broadway, New York City, for a list of books on the subject, and get acquainted with it. Then write to the various manufacturers of wireless apparatus for catalogs and terms, or if possible go to see them.

Manufacturer Willing to Coöperate

You will find the manufacturer only too glad to show you through his plant, and glad to explain any points the books did not clear up. Due to the fact that demand far exceeds supply at this time and will for many months to come, you will not find the manufacturer trying to oversell you.

But get in NOW. Get your order in. Orders, as in other lines, are filled in rotation, and you will probably get materials about the time you have become acquainted with the subject. Become known in your locality as the store that has wireless apparatus and can give good, sound advice on its purchase and use.

Radio is the coming business; the saturation point will not be reached for years and even when it is reached, every owner of a small set will want to replace it with a larger one that will bring in more distant stations. Then, too, there are vacuum tubes, batteries, and other supplies that must frequently be replaced. Radio is the coming business and it rightfully belongs to you electragists. Awaken to the opportunity that is before you!

Special Field Offered to Electragists in Summer

By E. R. Anderson

Engineer of General Electric Company Tells How Movie Theatres and Other Public Places Open up Unusual Opportunities for Fan Installations

It will not be long now before warm spring days will turn the thoughts of the motion picture theatre manager toward electric fans in anticipation of the torrid heat of summer and the sign he has in mind, "The Coolest Theatre in Town."

By making a mental survey of the approximate dimensions and the interior arrangements of the theatres in his territory, and by drawing upon his engineering knowledge, the electragist will be able to beat him to it. The theatre manager who makes inquiries will find him prepared with specific recommendations instead of having to ask for time to look into the matter; or better yet, the electragist will be able to go to the manager, without waiting to be asked, with plans for a complete installation.

As those who have had experience with fan installations for theatres know, there is no hard and fast rule that can be applied to the spacing or arrangement of the fans in such a place. Each theatre presents to some extent a separate problem. The result sought in each case is of course the circulation of the air in the vicinity of those attending the theatre, and an equipment that may effect this in one may be inadequate in another.

General Rules of Spacing

Experience has shown, however, that a safe general rule is to space 16-inch oscillating fans at intervals of not less than twenty feet around the sides of the house, and seven or eight feet from the floor. The fans will under ordinary circumstances cover the space satisfactorily if so arranged. It must be remembered that some persons object to the direct breeze from fans; hence each fan used should be so arranged that the direct current of air from it flows just over their heads. The same rule as to interval and height applies to those installed on the stage which offers a convenient vantage point on which to place them.

In the case of the larger theatres, ceiling fans used in conjunction with the oscillating type along the walls are an essential part of the cooling equipment. The effective range of a 16-inch oscillating fan is under ordinary conditions about 25 to 30 feet. Hence it is advisable to supplement them in the larger installations with the ceiling type. When both are used, they should be spaced alternately.

Ceiling fans of the 52-inch size should be spaced at intervals of about 20 feet, and as they send the air downward in a cone-shaped formation, spreading it as it is driven down, they should be installed not less than 15 feet above the floor so that any possible objection which might be made to a direct and noticeable breeze from them would be obviated.

Other Uses for Ceiling Fans

While ceiling fans are as their name implies ordinarily suspended from the

Care Must Be Taken to See that Fans Are so Placed that Air is Properly Circulated Throughout Entire Theatre

ceiling, they can also be installed elsewhere by the use of a bracket. In some of the large theatres fans of this type are placed horizontally along the edges of the balconies and along the side walls of the house.

The cooling process effected by the use of the electric fan is, as the electragist knows, but as a large percentage of the public in general does not realize, accomplished in two ways—by reducing the temperature of the skin by blowing cooler air upon it, and by inducing greater evaporation of perspiration.

If the breeze is too low in temperature or is so strong that evaporation becomes excessive, the cooling action will be too rapid and an uncomfortable feeling of chilliness may result. Therefore the breeze must be so regulated as to provide the right amount for comfort. This is accomplished by means of the variable speeds on the fan motor.

Regulation is also provided by wiring the fans so that they can be operated in banks, controlled from the box office or elsewhere. As each fan has its individual switch for turning on and off the current this adds to the convenience of the control since a number of fans may be started or stopped with one throw of a switch while any one or more may be operated independently of the others.

Observing Elementary Principles

All this is so simple a matter to the electragist that he is apt to overlook the fact that the theatre manager, like a large number of other persons, may not know about it. Knowledge of these elementary principles of fan operation, or the lack of such knowledge, sometimes means the difference between the satisfactory and the unsatisfactory operation of a fan, and a satisfied or dissatisfied purchaser.

Another thing that should be impressed on the theatre manager in considering an installation is that the installation should be planned to meet maximum hot weather conditions. An equipment that is entirely adequate in June may be very insufficient in August.

Incidentally, also, it may be said that the electragist has a strong argument in the fact that just as fans may be used for cooling in summer, they may be used with equally good results in circulating warm air in winter. The value of the fan as an auxiliary to heating equipment is a demonstrated fact. The purchaser of a fan therefore does not buy a seasonal device, but something which has an all the year utility and value.

The cooling and the ventilating of a theatre are to a vertain extent different matters and present different problems. In a modern theatre building the ventilating system has been or should have been carefully designed by the architect. In case the electragist is called into consultation when it proves unsatisfactory or when a building is being planned he will do well to have ready some facts in regard to it when asked for information.

How to Ventilate

Ventilation is accomplished by removing the air from a room a certain number of times per hour and replacing it with air from outside, or by replacing it to a certain extent and keeping it thoroughly and continually in motion. Adequate ventilation is essential to the popularity of a theatre. Complaints by patrons of the stuffiness of a theatre are a serious handicap to it.

While the exhaust fan is a necessity and of primary importance in this field, the oscillating fan is also a valuable aid. The improvement effected in the quality of air that is agitated and kept in motion has been clearly demonstrated by the investigations of Dr. Leonard Hill in England, and of others. They have found that the vitality of patients breathing air that is kept in motion has increased as much as 34 percent.

It is generally agreed that the air in a theatre should be entirely changed every ten minutes. In any event, at least thirty cubic feet of air per minute should be allowed for each person present.

Exhaust fans range in diameter from approximately eleven inches upward. The following tables show the number of cubic feet of free air that such fans, from 10¾ to 48 inches in diameter, will deliver per minute when operated by, respectively, direct and alternating current motors at voltages of either 110 or 220:

Diameter of fan, inches	Cubic feet of air per minute D. C.	A. C.
10¾	650	720
12½	845	750
14½	1165	1115
16	1485	1580
18¾	2180	1860
21¼	2900	2900
26¾	4800	4800
32	6900	6500
37¼	9700	9650
42¾	12500	12500
48	16300	17500

Fans used for ventilating are of the disc and propeller type and are intended for use with the air in free circulation not in extensive duct systems. They can, however, be employed in connection with a short duct where the resistance is low. In such installations the duct should be straight, of the same diameter as the fan, and not longer than thirty times the diameter of the fan. In cases where there are bends in the duct, a right angle bend is usually estimated to have a resistance equivalent to a straight duct of ten times the diameter. Bends of lesser degree are estimated proportionately.

Fans of the exhaust or ventilating type are usually installed in the side walls or ceiling; and if when they exhaust into the open air they are exposed to high winds they should be protected

Lunchrooms Are Comparatively Easy to Ventilate Because of Small Uniform Space

by a louvre or hood to minimize the effect of counter drafts or gusts imposing a sudden and perhaps heavy overload on the motor.

It is for this reason that motors of large overload capacity are necessary. They should also have their working parts thoroughly protected so that if necessary they can run for a long time without attention. In addition they should be totally enclosed to prevent dust from getting into the windings, bearing housings, and on the commutators of direct current and single phase alternating current types where it would seriously handicap the efficient operation of the fan.

Types of Motors Used

Three types of motors are used for this purpose: direct current; single phase, alternating current; and for polyphase circuits, riveted frame squirrel cage motors. The speed regulation of the direct current motors is supplied by a speed regulating rheostat that will reduce the speed to fifty percent of normal. That of alternating current motors is obtained by speed regulators on the single phase circuits; but where only polyphase circuits are available, and regulation is desired, the best method is to use a single phase motor operating on one phase of the circuit.

The electragist is necessarily a combination of engineer and salesman. He will find that as he broadens and intensifies his knowledge of engineering he will increase his efficiency and add to his results in the sales field.

It seems fair to say that the sale of fans for the purpose under discussion is an example of this; for the man who is a salesman only will meet with some puzzling questions when he comes to tell the theatre manager how extensive an equipment is needed for this theatre, and how it should be arranged.

What has been said of theatres may also be said in general of other places of assemblage—churches, restaurants, schools, libraries, etc. Each presents its special problems, but if the electragist will call upon his engineering knowledge he will find them soluble, and his sales instinct ought to more than hint to him the selling possibilities in these fields.

Future of Radio Telephone Broadcasting

By HARRY C. TURNOCK

Cleveland Estimating Expert Has Prophetic Dream of Inventions to Be

It it logical to predict that developments in the art and science of radio telephony will surpass past achievements with startling brilliancy. Radio telephone broadcasting will naturally keep pace and become a practical and commercial utility, but its success largely depends upon the development and application to broadcasting of such instruments—unknown at present— as the Phototron, Goniotron, Chromotron.

Envisioned: Throngs of people in radio auditorium— on the screen, a man, his voice heard * * * Opera, Faust—he himself is there.* * * The last of the ninth; Ruth up. Strike tuh! Smack! a homer * *game won; cheers!—crowd leaving. * * * Sunday, a sermon * * * Symphony concert. * * * Deliberations of the senate. * * * Steamship, mid Atlantic, the traveller waves a greeting.

Phototron—1930

* * * rainy night, family at home * * subscribers to broadcasting service. Station broadcasts to its own subscribers.

Goniotron—1940

* * * clocks ashore and chronometers afloat, synchronized by

Synchronotron—1950

* * * several broadcasters operating without confusion on similar wave lengths corresponding simultaneously with own subscribers.

Phono-Selectotron—1960

* * * flower show, colorful blossoms; odor of a rose * * * orchestra strains * * * song of a bird.

Chromotrom-Transodoroscope—1970

* * * Shades of Jules Verne! * * * Posterity listens. A voice! * * * It sees! * * * A Personage! * * * A citizen on Mars!

Extract from National Electragist, February, 2000!

* * * referring to Radio article * * * April, 1922, * * * future Editors will not impose a limitation of 250 words upon contributors who indulge in prophetic visions. The world will be the gainer.

High Class Restaurants Present Singular Problems as Proper Air Circulation Must Be Effected by Fans Which Harmonize With Other Fixtures

Next National Convention

Hotel Sinton, Cincinnati Headquarters Selected for 22nd Annual Meeting

Preparations for the twenty-second annual convention of the National Association of Electrical Contractors and Dealers are now well past the preliminary stage. National Chairman James R. Strong and the national secretary visited the scene of action in Cincinnati early last month, and were unusually successful in making definite arrangements for the big doings in October.

Mr. Strong and Mr. Johnson met the local committee in Cincinnati, and having called in expert service from the former general manager, W. H. Mor-

ton, were enabled to get down to brass tacks in short order. And if the preliminary work of the local committee that had already been appointed in Cincinnati is evidence of convention activities, members of the National Association can be assured of the biggest and best convention ever held.

The committee in Cincinnati comprised the following: Charles M. Beltzhoover, chairman; Frank D. VanWinkle; Samuel D. Heed; George H. Jones; Thomas Quinlan; James A. Brett; and Walter R. Keefer. Major Heed represented W. W. Freeman, president of the local power company. Mr. Quinlan is manager of the convention publicity department, Cincinnati Chamber of Commerce; and Mr. Jones represents The F. D. Lawrence Electric Company of Cincinnati.

Official Headquarters

The committee made a tour of the hotel district, and after sizing up the facilities and equipment of the leading hotels, selected the Hotel Sinton as the official headquarters. The Hotel Gibson is just across the street from the Sinton, and as both of these hotels are conveniently located in the business district of the Queen city, they will afford excellent quarters for the big crowd that will be in attendance. In addition to these there are a number of other attractive hostelries nearby so that attendants may be assured of good accommodations.

A tentative program was arranged and although it is too early to list the features at this time it may be said that at every session of the convention there will be attractions which will not only interest and entertain the convention visitors but will materially add to their future profit in business. In other words there is assurance that the twenty-second annual convention will be informative as well as entertaining.

Convenient for All

To electragists located within the bounds of the great midwest, Cincinnati will need little introduction. It has long been known for its hospitality, and rightly comes by its distinction as the Queen city. From its vantage on seven hills it overlooks the historic Ohio in a truly beautiful manner, and from one observation point four cities in the neighboring state of Kentucky can be seen. Another picturesque view is this beautiful river as it winds its way between the Ohio and Kentucky shores on its course southwest to Louisville and beyond to the majestic Mississippi.

Because of its comprehensive and highly specialized accommodations, Cincinnati is a most desirable convention city. Hotel Sinton is especially noted for its convention accommodations. It is located in the heart of the business district and is easy of access to all points of interest. Its convention hall on the ground floor seats eight hundred. Besides the registration bureau it has smaller meeting rooms which are well equipped for committee sessions and similar meetings. The committee has the assurance of J. L. Horgan, manager of the headquarters hotel, that every effort will be put forth by the management to properly provide for guests.

Actual Time Studies in Estimating

By J. Gilston

Representative of Edwards Electrical Construction Co., New York City, Submits Definite Figures for Discussion

The following sets forth the cost analysis for an actual job, records of which were kept in the Cost Record Book of the Electrical Estimators' Association of greater New York.

First are shown the labor figures kept on the job, with tables following that show competitive estimates and comparative estimates derived from studies made by four outside estimators according to specifications submitted.

Bulletin Issued October 31, 1921

Notes on Labor Obtained From Records Kept on the Job

Skeleton steel frame—concrete floors and walls. Area 140 x 240 feet—Ceiling height, 15 feet—Four floors and base. Time—May to September, 1921. Journeymen, $9.00; Helper, $5.50. Two panels per floor—four outlets per bay of 20 feet. Average of four outlets per circuit.

Item No.	Non-Productive	Total Labor	Unit
1.	Erecting shanty, etc	$ 10.62	
2.	Clerical work, stock keeping	30.57	
3.	Running errands	4.98	
4.	Laying out work by foreman	91.00	
5.	General supervision by foreman	275.82	
6.	Handling materials	105.96	
	Total	$518.68	
7.	Walking foreman	115.00	
8.	Temporary light	443.79	

	Productive Labor	Total Labor	Unit
10.	Installing 19.600′ ½″ / 3.500′ ¾″	1637.57	.0708
	Including outlet boexs as follows: 1070 ceil. boxes, concrete type; 150 switch and recept. boxes; 60 floor boxes; 2500 pipe entrances. Aver. 12′ per outlet. No home runs 210′ per team day		
11.	Installing 3600′ 1″ home runs no boxes. Ave. 320′ per team day	169.83	.0468
12.	Installing 330′ 1½″ / 480′ 2″ long elev. risers—not incl. racks for horizontals in base. Ave. 125′ per team day	97.23	.12
13.	Installing 475′ 3″ saddled around beams bet. panels. Ave. 27′ per team day	253.40	.533
14.	Installing 340′ 3½″ dropped in pipe trench. Ave. 85′ per team day	60.55	.178
21.	Setting 15 panel boxes incl. nippling home runs. 348 cir.	162.13	.466
29.	Correcting Mfgr's mistakes	5.75	----
72.	Set and connect 13 panel boards total actual circuits, 332	178.15	.54
40.	Pulling 15,000′ No. 14 single 70,250′ No. 12 single	839.08	9.83 M
41.	Pulling 490′ No. 8 single	1.82	----
42.	Pulling 500′ No. 4 single	.91	----
43.	Pulling 1145′ No. 1/0 B & S 35′ No. 2/0 B & S 984′ No. 4/0 B & S. Four feeder runs	28.94	13.50 M
44.	Pulling 294′ No. 400,000 C. M.	9.75	33.00 M
45.	Pulling 1813′ No. 500,000 C. M. 375′ No. 600,000 C. M. Five feeder runs	139.29	63.00 M
46.	Pulling 810′ No. 700,000 C. M.	27.12	33.50 M
56.	Running 70′ 2 wire BX	5.44	----

70.	Erecting and connecting lighting switchboard and box: 4—100 amp. 3 p. sws. 500,000; 1—200 amp. 3 p. sws. 1/0; 1— 30 amp 3 p. sws. No. 12	53.57	----
	Ditto for Power switchb'd and box: 2—400 amp. 2 p. sws. No. 4/0; 1—200 amp. 2 p. sws. No. 1/0; 7— 30 amp. 2 p. sws. No. 12	27.92	----
71A.	Connections to lugs on meter b'd: 6—700,000 C. M.; 2—600,000 C. M.; 2—500,000 C. M.; 3—1/0	22.66	1.74 ea.
74.	Installing and connecting, 8—30 amp. 2 p. sq. D sws.	9.73	1.22 ea.
75.	Installing and connecting (one side) 4—200 amp. 2 p. knife sws. and boxes	9.98	2.49 ea.
81.	Installing and connecting 3 5HP. starter	4.30	----
84.	Installing and connecting 5 motors (1/2—5)	6.80	----
92.	Setting 3—36″ Fans, Frames in position	11.38	3.79
100.	Installing and connecting 110 base receptacles: 14 S. P. sws.; 24—3 way sws.; 4—4 way sws.	70.94	.47 ea.
106.	Assemble, hang and connect 724—300 watt Duplexalites with canopy switches; 172—300 watt Duplexalites; 83—Benjamins & Ivanhoes. Ave. per day 20	802.57	.82 ea.
	Total Productive Payroll	4767.53	
	Total Non-Productive Payrolls	518.58	
	Temporary light	443.79	
	TOTAL PAYROLL	5730.00	

O.K. with Ledger.
Non-productive labor (without walking foreman) is 10.9% of Productive.

COMPARISON OF FOUR ESTIMATES WITH ACTUAL JOB COSTS

These estimates represent the individual's estimated labor costs on the actual quantities used on job.

Item No. of Bulletin	QUANTITIES ACTUALLY USED	*ACTUAL Units	*ACTUAL Totals	A Units	A Totals	A % of Actual	B Units	B Totals	B % of Actual	C Units	C Totals	C % of Actual	D Units	D Totals	D % of Actual	COMPARISON Per Cent Maxim'm Variati'n Above Actual	COMPARISON Per Cent Maxim'm Variati'n Below Actual	COMPARISON Average Variati'n from Actual
10	1.070 —Ceiling Boxes			.50	535.00		.50	535.00		.40	428.00		.36					
	150 —Sw. & Recept. Bxs.			.50	75.00		.50	75.00		.40	60.00		.36					
	60 —Floor Boxes			1.50	90.00		1.10	66.00		.70	42.00		1.50					
	19,600′—½″ Conduit			.07	1372.00		.07	1372.00		.07	1372.00		.06					
	3,500′—¾″ Conduit	.0785		.07	245.00	+ 27.6	.08	280.00	+ 28.2	.08	280.00	+ 20.2	.06		+ 5.7	28.2	0	20.4
			1816.06		2317.00			2328.00			2182.00			1920.00				
11	3,600′—1″ Conduit	.0524	188.51	.09	326.00	+ 72.9	.09	326.70	+ 73.3	.09	326.70	+ 73.3	.075	270.00	+ 43.2	+ 73.3	0	65.6
12	330′—1½″ Conduit			.20	66.00		.16	52.80		.12	39.60		.20					
	480′—2″ Conduit	.133	107.93	.25	120.00	+ 72.4	.18	86.40	+ 29	.15	72.00	+ 3.4	.20		+ 52.8	72.4	0	39.4
					186.00			139.20			111.60			165.00				
13	475′—3″ Conduit	.592	281.27	.35	166.25	— 40.8	.30	142.50	— 49.3	.20	95.00	— 66.2	.44	210.00	— 25.8	0	— 66.2	45.4
14	340′—3½″ Conduit	.1976	67.21	.40	136.00	+ 103	.40	136.00	+ 103	.30	102.00	+ 52.2	.22	75.00	+ 11.9	+ 103	0	67.5
			2460.98		3131.95	+ 27.2		3072.40	+ 24.8		2817.30	+ 14.4		2640.00	+ 6.8	+ 27.2	0	18.3
40	15,000′—No. 14-S. Wire			.008	120.00					.005	75.00		.008					
	70,250′—No. 12-S. Wire	.0109	931.38	.008	562.00	— 26.8			— 51.7	.01	702.50	— 16.5	.008		— 24.3	0	— 51.7	29.8
					682.00			450.00			777.50			705.00				
41	490′—No. 8-S. Wire		2.02	.01	4.90		.01	4.90		.01	4.90							
42	500′—No. 4 Wire		1.01	.01	5.00		.01	5.00		.01	5.00							
					9.90			9.90			9.90							
43	1,145′—No. 1/0			.02	22.90	+ 66.4	.02	22.90	+ 66.4	.02	22.90	+ 25.6	.025		+ 63.5	66.4	0	55.5
	35′—No. 2/0	.0148	32.12	.03	1.05		.03	1.05		.02	.70		.025					
	984′—No. 4/0			.03	29.52		.03	29.52		.02	19.68		.025					
					53.47			53.47			43.28			52.50				
44	294′—No. 400,000	.0368	10.82	.04	11.76		.04	11.76		.03	8.82		.055					
45	1,813′—No. 500,000			.05	90.65		.05	90.65		.03	54.39		.055					
	375′—No. 600,000	.0706	154.61	.05	18.75		.06	22.50		.04	15.00		.055					
46	810′—No. 700,000	.037	30.10	.06	48.60	— 13.2	.06	48.60		.04	32.40		.055					
			195.53		169.76	— 21.2		173.51	— 11.2		110.61	— 43.5		180.00	— 7.9	0	— 43.5	19.0
21	330 —Circuits		1162.06		915.13			686.88	— 40.9		941.29	— 19		937.50	— 19.3	0	— 40.9	25
72		.517	179.96	1.00	330.00					1.00	330.00			360.00				
	Sw. Bd. Light	.595	197.75	30.00	30.00					24.00	24.00							
70	Sw. Bd. Power		90.45	20.00	20.00					20.00	20.00			112.50				
71A	24 Lugs. Service Bd.	1.93ea	25.15	.75	18.00					.60	14.40			26.25				
			493.31		398.00	— 19.3		250.00	— 49.3		388.40	— 19.3		498.75	+ 1.1	1.1	— 49.3	22.3
106	896 —Duplexalites	.91	890.85	.90	806.40	— 0.2	.80	716.80	— 12.5	1.00	896.00	+ 9.9	.95		+ 6.8	9.9	— 12.5	7.3
	83 —Benj. Fixtures	.518	78.74	1.00	83.00	— 3.5	.75	62.25	— 3.5	1.00	83.00	— 3.5	1.20		+ 14.2	14.2	— 3.5	6.1
					889.40			779.05			979.00			952.00				
100	152 —Base Re'p't. & Sws.			.50	76.00		.50	76.00		.50	76.00			90.00				
	Miscellaneous Items		65.10		5410.08	+ 5.2		4864.33	— 5.5		5202.00	+ 1		5118.25	— 0.64	+ 5.2	— 5.5	3.1
	TOTAL LABOR		5151.04															

* Note:—The non-productive labor has been distributed among the items headed "Actual" by adding about 11% to each item from Bulletin October 31. 1921.

	PROPORTION OF TOTAL LABOR (EXCLUSIVE OF FIXTURES) IN PERCENTAGE. Actual	A	B	C	D	F	G	AVERAGE ABCDFG	AVERAGE Actual	COMPARISON % Max. Variation Above Actual	COMPARISON % Max. Variation Below Actual	COMPARISON Average Variati'n from Actual
Total Conduit and Outlet Boxes	60	70.	75.	67.	63.	76.	72.8	70.7	60.	+ 16.	0	+ 10.7
Total Wire	28	20.	17.	22.	23.	16.4	17.6	19.3	28.	0	— 12.	— 8.7
Total Panels. Sws. and Receptacles	11.	10.5	8	11.	14.	7.3	10.	10.1	11.	+ 3.	— 4.	— 1.

Table No. 1, Result of Four Estimators, A, B, C and D, Working Out Estimates From Actual Job Costs

Conclusions Drawn From Tabulations

The first section of the table is a comparison of Estimates A, B, C and D with the actual. The estimates A, B, C and D were prepared from the data contained in Bulletin, October 31st, 1921. This comparison discloses that Estimates A, B, C and D averaged 25 percent above the actual cost for installing ½ inch and ¾ inch conduit and outlet boxes, and averaged 68 percent high for installing the 1 inch conduit.

These items taken together represent all the branch circuit work of the job, and as the labor on the branch circuit work for this job is about 40 percent of the total labor for the entire job, it is readily seen that the estimates A, B, C and D being more than 25 percent in error on these items would throw *their estimated total labor* on the job off 10 percent.

It will be noted that the estimated labor for all the remaining conduit items are also high, except the item of 3-inch conduit, which was found to cost fifty-eight cents per foot to install, due to the necessity of saddling around beams, one being required for almost every length of conduit.

The estimated labor of A, B, C and D for *roughing* the entire job averaged 20½ percent. higher than actual, and as the labor for *roughing* the job represents about 60 percent of the entire labor cost of the job, this tends to make the total labor about 12 percent high.

The estimated labor of A, B, C and D for pulling in the branch circuit wiring (No. 14 and No. 12) averaged 45 percent lower than actual.

The estimated labor for pulling all the wire on the job averaged 33 percent below the actual cost for this work.

The labor of pulling all the wire on this job represents about 28 percent of the total labor on the job, and as this was estimated 33 percent low, it tends to make the total labor about 9½ percent low.

It will be remembered that the error in the estimated labor for roughing tended to make the total labor 12 percent high.

The estimated labor for the finishing items averaged from 2 percent high for setting panels and switchboard to 6 percent high for hanging fixtures. The finishing items represent about 11 percent of the total labor of the job.

A comparison of the *total estimated labor* for the job as obtained by A, B, C and D with the actual shows that these estimates averaged 5 percent higher than the actual. That this difference is not greater is due to the fact that the error in estimating the roughing was largely offset by the error in estimating the pulling of wire, as shown.

An examination of the estimates prepared by A, B, C and D, and a comparison of these with the actual, shows very strikingly that the estimated labor for each item of construction must be based on the conditions which will actually be met on the particular job, and not merely on average conditions.

The second section of the table is a comparison of Estimates F and G with the actual and each other.

The Estimates F and G, Table No. 2, were prepared from the plans and specifications by two competitors.

Comparison of Two Competitive Estimates With Each Other and With the Actual

QUANTITIES ESTIMATED	F Units	F Totals	F % of Actual $	QUANTITIES ESTIMATED	G Units	G Totals	G % of Actual $	Quantity Comparison % F of Actual	% G of Actual	% F of G
1059 Ceiling Boxes	.50	529.00		1016 Ceiling Boxes	.50	508.00		+ 3.	— 1.4	+ 4.
124 Sw. & Recpt. Boxes	1.00	124.00		125 Sw. & Recept. Bxs.	1.00	125.00				
25—⅓ H.P. Boxes	.25	6.00		14—⅓ H.P. Boxes	1.50	21.00				
19,500′—½″ Conduit	.07	1365.00		21,000′—½″ Conduit	.07	1470.00		0	+ 7.	— 7.
810′—¾″ Conduit	.08	68.00		6,000′—¾″ Conduit	.07	420.00		+ 330.	+ 71	— 650.
6,700′—1″ Conduit	.09	603.00		200′—1″ Conduit	.09	18.00		+ 122.	— 1400.	+ 3250.
750′—1¼″ Conduit	.14	105.00								
				280′—1½″ Conduit	.20	56.00			— 18.	
270′—2″ Conduit	.18	49.00		1,850′—2″ Conduit	.25	462.50		— 78.	+ 290.	— 580.
1,250′—2½″ Conduit	.22	275.00								
								— 375.		
100′—3″ Conduit	.30	30.00						+ 17.		
400′—3½″ Conduit	.40	160.00								
		3314.00	+ 34.5			3080.50	+ 25			
45,000′—No. 12 Twin	.01	450.00		70,000′—No. 12-S	.008	560.00		+ 28.	— 0.36	+ 28.5
660′—No. 10-S	.01	7.00								
		457.00								
450′—No. 8	.01	5.00		350′—No. 8	.01	5.00		— 8.9	— 40.	+ 30.
1,500′—No. 2	.02	30.00								
				860′—No. 1	.02	17.00				
810′—No. 2/0	.03	24.00		3,000′—No. 2/0	.03	90.00		+ 2230.	+ 8400.	— 270.
3,740′—No. 4/0	.03	112.00		2,100′—No. 4/0	.03	63.00		+ 280.	+ 113.	+ 71.
200′—No. 500,000	.05	10.00						— 806.		
1,200′—No. 700,000	.06	72.00						+ 48.		
		710.00	— 39			735.00	— 36.7			
13 Panels				12 Panels		295.00				
Main Bd.				Main Bd.		50.00				
Service Bd.				Service Bd.		10.00				
		250.00	— 49.3			355.00	— 28	— 6.2	+ 6.2	
952—Duplexalites	.80	762.00		952—Duplexalites		800.00		+ 6.2	+ 6.2	
110—Benj. Fixt.	.75	80.25		101—Benj. Fixt.	1.00	101.00		+ 29.	+ 22.	+ 5.9
		842.25	— 5.4			901.00	+ 1.1			
		5124.25				5071.50	— 0.15			

Table No. 2, Estimates Prepared from Plans by Two Competing Estimators

A reference to the "Quantity Comparison" will show that some of the quantities estimated by F and G differ very greatly from each other and from what was actually installed. This may be due to a lack of details in the plans and specifications permitting of different interpretations; also there were changes made in the installation which would account for some of the differences between the actual and F and G.

It will be noted that Estimate F has an item of 6700 feet of 1-inch conduit, while Estimate G has but 200 feet of 1-inch conduit and 6,000 feet of ¾-inch conduit. This would seem to indicate that F contemplated grouping branch circuits in 1-inch conduit while G limited the grouping of circuits to ¾-inch conduit. The plans showed practically all the ceiling outlets under structural steel beams, and it is very doubtful if the grouping of circuits in 1-inch conduit would have been found feasible.

A subsequent change in the steel design made unnecessary installing the outlets under the beams, but this could hardly have been anticipated when estimating the job.

The estimated labor for roughing by F and G averages 26 percent higher than the actual as compared with 25 percent for estimate A, B, C and D.

The estimated labor for pulling the wire by F and G averages 57 percent lower than actual as compared with an average of 45 percent low for A, B, C and D, thus showing that the judgments of six independent estimators were in general agreement about estimating higher for roughing labor and lower for pulling of wire.

The judgment of these men may prove to be sound for the average job by additional data to be collected, or to be in error as the actual costs on this job would seem to indicate. The estimates for this job are high on roughing and low on wire pulling, but these differences offset each other, leaving the total labor approximately correct.

The Best Day

R. J. Strittmatter of the Apex Electrical Distributing Co. of Cleveland, says:

If you ask a child what he thinks is the best day in the whole year, the child will probably answer, "Christmas." He has a reason for saying that. Christmas is a day of toys, games, and gladness.

Ask a glutton, and he will say, "The best day is Thanksgiving." The pleasures of palate are uppermost in his mind.

Ask an electrical dealer, and he will stumble over the answer. "The best day? I suppose you mean the best in a business way. Oh, any time in Spring is good; lots of cleaners are sold then. But then, in Summer there's the fan business. In Winter, heaters, electric stoves. Best day? Well, I don't know. Pretty hard to tell."

Ninety-nine electrical men out of a hundred will select as best some day that is far removed from the present one. That's a trait of human nature.

What do I consider the very best day in the year?

Of course it's today! Gloom may try in a thousand ways to surround us, our prospects may fail us, any number of circumstances may be amiss.

But today is the best day! The very best day in 1902, or 1922, or any other year on the calendar is today! Why man, there's a genuine thrill in the sound of it!

Proper Uses of Credit

J. H. Tregoe, secretary of the National Association of Credit Men, says that credit is in a large measure an impersonal term. What it is, what it can do, how it may be used and abused, have been left largely to the student and are not apprehended properly by the grantors and receivers of credit generally.

Credit is largely symbolic. It is a promise exchanged for a value. It isn't of itself a value, but is founded upon and represents value. Though the promisor or receiver of a credit may be perfectly well qualified to protect it according to promise, yet technically and properly credit should always be supported by a value in existence.

The abuse of credit arises frequently from the removal of the underlying value or the pivoting of several credits on one value. In the production of basic commodities, in the fabrication of these basic materials, in the transferrals from manufacturer to wholesaler to retailer, credit should follow the value and be extinguished with each transferral.

Electioneering by Radio

For the first time in the history of electioneering, candidates were able to talk to the public without the latter leaving their homes, when arrangements were made in Pittsburgh by the Westinghouse Company to send broadcast by radio the speeches by the candidates for office in that city.

The nominations for mayor proved a very bitter fight in Pittsburgh recently, and radio was called into play to get the messages of the candidates to the people. In this way thousands of persons were addressed at one time without the inconvenience of leaving their own radio set. Each candidate for mayor was sent to the broadcasting station, where he was allowed five minutes to tell the reasons why he should be elected to the office. This proved to be quite popular, and excited a great deal of interest in Pittsburgh and vicinity.

Benefits of the Standard Accounting System

By V. G. Fullman

How the Adoption of Uniform Methods Will Increase the Efficiency of Your Business—Address at Annual Convention of Indiana State Association

The statement that a chain is no stronger than its weakest link applies to the electrical industry as at present organized and it was with the idea of strengthening one of the weak links that the Standard Accounting System was devised.

The necessity for this accounting system may not be particularly apparent to the contractors and dealers here assembled because I believe the concerns that are represented at meetings of this kind are progressive and beyond criticism from a financial standpoint. But there are a large number of concerns (approximately 10,000) in the electrical industry that are, at one time or another, slow in meeting their financial obligations. This represents about forty to fifty percent of the concerns with whom members of the National Electrical Credit Association have had experience. This proportion is entirely too large and the sooner it is reduced the better it will be for the electrical industry and particularly for the contractors and dealers that are now suffering from irresponsible competition and having difficulty in making a fair net profit.

The campaign to promote more universal use of the Standard Accounting System must not be interpreted to mean that profiteering is to be encouraged. The System is primarily designed to show exactly the cost of doing business so that losses may be absolutely avoided and a fair profit earned.

Teach Competitors

It is unnecessary for me to ask if you wish the elimination of unfair competition but I do *not* believe it is your desire to drive your irresponsible competitors out of business. The most sensible plan is to teach such competitors proper methods of doing business. Once they see the light they will reform their methods without urging.

The most difficult problem is to get the interest of the slow pay concern aroused. Credit is a very delicate subject for the individual credit man to discuss lone handed with such concerns and it is only by *concerted action* that the desired result can be obtained without detriment to any particular creditor or credit manager.

You have no doubt read the article which appeared recently in several of the electrical trade papers suggesting the use of stickers on statements of past due accounts and on collection letters. With proper modesty I believe the use of these stickers so far has resulted in more requests for information and literature about the System in the last few months than were received in the last few years since the System was placed on sale by your National Association.

The reason is that these stickers are sent *simultaneously* to a certain concern by a majority of the creditors, driving home in an impersonal way the necessity for improvement in the method of making payments and encouraging an inquiry for information about the accounting system, the installation of which is indirectly suggested as the proper way out of the difficulty.

Service First

We are all in business primarily to render service to others and secondarily to obtain fair remuneration for that service if possible. I would respectfully suggest the study of Emerson's essay on Compensation to any that may disagree.

There are a number of ways in which you can be of service to others in promoting more universal adoption of the Standard Accounting System.

The principal way is to persuade nonmembers to join your Association and then give this subject a prominent place in your discussions at your regular or annual meetings so that all of the advantages of the accounting system may be fully understood and appreciated. It is only by association of individuals and ideas that real progress is made.

Most of the electrical trade papers now have a financial department and your members should contribute articles to such trade papers giving concrete examples of benefits derived by installation of the accounting system.

Salesmen that call on you should be urged to avoid soliciting orders from slow pay concerns that have not installed the accounting system.

Make Resolutions

Suitable resolutions should be made and published calling upon credit managers to assist you in promoting more universal adoption of the accounting system by slow pay concerns, thereby eliminating the reckless and irresponsible competition to which you are frequently if not constantly subjected.

Similar resolutions should call upon credit managers not to extend credit to newly organized concerns that have not installed the accounting system and that are not properly equipped with sufficient capital, capable management, experience and other necessary requirements for the foundation of a successful enterprise. Such concerns should be convinced right at the start of the necessity of the Standard Accounting System before credit is extended.

Your National Association should be urged to employ a field representative to look after the proper installation and maintenance of the System and to cooperate with the local or state associations in this work. Where justified by conditions the various local associations should have their own field representatives with duties similar to the national field representative. The cost will be a good investment.

Set Good Example

Contractors and dealers that are prompt pay and are making a fair net profit can also derive benefit from the Standard Accounting System. It is therefore suggested that you set a good example for your slow pay competitors by installing the System in your own business. It has already been demonstrated of particular advantage to contractors and dealers that have their business divided into several departments. Installation of the System in such cases may show that you are unknowingly losing money, in one or more departments, which may be concealed by the profits of the other departments.

One of the best arguments for an efficient accounting system is the fact that you can, at any time, make a statement to your banker and secure a necessary loan instead of holding up payment of bills and jeopardizing your credit standing. Creditors do not relish, as a rule, having the röle of banker thrust upon them.

It is the real function of the banker to supply additional capital where needed and justified. One of your most valuable assets is a close relation with your banker, based on confidence and mutual

UMI

understanding, that enables you to safely weather the business storms that frequently harass the contractor.

Profit Offsets Interest

Not only is your credit standing thus maintained but the cash discounts which you earn represent a considerable profit which more than offsets the interest charges on your bank loans. The practice of sending copies of your financial statement, *unsolicited*, to the concerns from whom you make purchases is highly commendable and creates a feeling of confidence in you.

In closing I wish to call attention to the work of the committee which formulated the Standard Accounting System of which George J. Murphy of Pettingell Andrews Co., Boston, Mass., was chairman. The members of this committee gave a great deal of their valuable time and energy and spent a large sum of money in order to make it possible for contractors and dealers to conduct business on a profitable and intelligent basis. The other members of this committee are M. A. Curran, T. H. West, Ernest Freeman and J. Bray.

Credit is also due J. E. Sweeney, Stanley A. Dennis, W. H. Morton, M. H. Thomas, C. E. Patterson, R. B. Woolley and O. H. Caldwell who were pioneers in the movement for more efficient accounting.

Every branch of the electrical industry owes these men a debt of gratitude and I would suggest that a suitable resolution be passed by this meeting acknowledging appreciation of their labors and pledging the hearty cooperation of your Association.

The Standard Accounting System has been approved and endorsed by the National Electrical Credit Association, Electrical Supply Jobbers Association, The Associated Manufacturers of Electrical Supplies, The Society for Electrical Development, Electrical Merchandising, and has been adopted and copyrighted by the National Association of Electrical Contractors and Dealers. With such approval is there any electrical contractor or dealer that should hesitate to install the System or that can afford to be without it?

Why the Jobber and Electragist Should Work Together

By Blythe Johnson

This Interesting Discussion Was an Address Before the Recent Annual Convention of the Indiana State Association

In the first place the jobbers and the contractor-dealers are both a necessary evil, whose aim is to serve the public and as one cannot survive without the other, why not work together for the mutual benefit of both parties, and there are several subjects we think would be well to discuss at this meeting that should be a benefit to both of us.

The jobber as we understand the term means a business whose object is to act as distributor from the manufacturer to the dealer and not to the ultimate consumer, The manufacturers give the jobbers a price which allows them to sell to the dealers and leave them a profit and we think it only fair for the jobbers to treat the dealers the same, that is, if they should make a sale to the ultimate consumer to get a price that would enable the dealer to make a profit in case the dealer made the sale.

There is quite a little psychology in dealing with the public and a number of people buy from a jobber because he is a jobber and think they have the same price from the jobber that a dealer could get, and in a good many instances they do get as good a price as the dealer. If the public could be made to understand that the dealer could sell at the same price that the jobber would sell them, I cannot help but think that the contractor-dealer would feel entirely different toward the jobber.

Fair Profit

Relative to factories and the larger buyers, we realize that the local dealers in a good many cases probably could not handle this, but where there is a dealer that is capable of handling this material we think the jobber should quote a price that would allow the dealer a fair profit in case he could land the business.

The majority of factories buy all they can from the jobber and when they want some fitting or some material in a hurry and the dealer charges them a legitimate profit on his sale, they come back at you and tell you you are a profiteer and tell you they bought the same article for half what you charge them, etc. We have had instances in our own experience that the factories bought material from jobbers at a less price than the jobber quoted us.

The salesmen are often interested more in securing an order, regardless of who they are selling to and not sufficiently interested in the sale of goods on the contractors shelf. Not that we expect a salesman to come along and sell our merchandise but in case he had a sale for some article that he knew his dealer had in stock to at least try to sell this article for the contractor instead of selling direct.

Coöperation

For instance, a jobber sells a washing machine or some other appliance to a dealer. He should be interested in knowing whether this dealer knows how to sell such appliances and whether he can give service after he has sold them. The majority of dealers in appliances that are not electrical contractor-dealers, do not know the principle governing the operation of them and often make absurd assertions that the real electrical dealer has a hard time explaining, and they are not in position to give service after the sale is made.

The ultimate consumer in this case has to have service sooner or later, and we think this branch of the business rightfully belongs to the contractor-dealer and not to drug store, hardware and notion stores. The jobber should recognize this fact and not try to make these other classes of business competitors of the contractor-dealer.

We also think the jobber should not estimate work and finance irresponsible contractors. I have known instances where salesmen have estimated jobs and sold the material and looked to the own-

er of the building for payment. In some cases the material cost was as much as the original contract, by the time the job was finished.

I contend that if a contractor is not capable of estimating his own material and labor he should hire a competent man to do this and not think it is the jobbers place to estimate material and labor for a job. For in nine cases out of ten if the so-called contractor is not able to estimate the work, how can he install it?

Merchandising

Another thing that it would be well for the jobber and dealer to work together on, is the handling of advertised merchandise—merchandise that the selling price is set and maintained by the manufacturer. In the majority of cases in handling these lines there is not enough margin of profit to the dealer to even pay operating expenses, and in addition to tieing up his capital the contractor-dealer has to sell it at a loss. If he makes any money he has to make it up in some other way. It looks as though if this were properly presented to the manufacturers by both parties some adjustment could be made.

There are several other ways that the jobber could assist the contractor-dealer. For instance, assistance in accounting, preparing newspaper ads and keeping the dealer posted as to market conditions and working in the interest of the Contractor-Dealer's Association, etc.

The National Association has evolved a system of accounting, which should be universally adopted, and the jobber could help materially in putting this across because he knows more of the business condition of his customers than his fellow contractor-dealer has the privilege of finding out. It looks to me as though the jobbers should be interested in teaching their customers how to conduct their business on a basis if for no other reason than it would make them a better financial risk.

Relation of Central Station to Electragist

By H. B. WHITEMAN

Talk Before Annual Tennessee State Association Convention

The relation existing between the central station and the electragists of Memphis has been harmonious with a spirit of coöperation always in evidence. The interests of these two factors are parallel; one produces the electrical energy ready for the market and the other serves as an outlet or salesman for the distribution of the manufactured product or the electrical energy.

We have always found the electrical contractor-dealers of Memphis ready and willing to assist the central station in its campaign of education of the public. This relationship has existed for many years and will undoubtedly continue for many more.

The central station has a policy whereby the electrical contractor-dealer receives no competition from it in the sale of electrical wiring, fixtures, motors or appliances. Since adopting this policy many years ago, it was found that practically all of the dealers were a splendid asset to the central station and in thorough sympathy in maintaining happy relations with the public.

As a general rule the dealers are successful business men who conduct establishments which can be compared favorably with the stores of any other business in the city in assurance and friendliness. These dealers are wide awake and their sales organization are industriously engaged in developing their volume of electric appliance sales. One of the most satisfactory evidences of the high type of men engaged in the contractor-dealer branch of the electrical industry in Memphis lies in the fact that many of them take an active interest in the civic welfare of the city.

During the past few years the electrical fraternity of Memphis has done some splendid coöoperative work, especially in connection with the two elaborate electrical shows in the development of the central station and electragist units. These shows resulted in a distinct education contribution to the civic life of the community, a veritable throng of citizens young and old crowding the exhibit building day and night throughout the time of the exposition. These demonstrations created a most favorable attitude on the part of the public toward the electrical interests.

As a further evidence of the spirit of coöperation which exists the industry has on several occasions undertaken the entire responsibility of erecting a gigantic electrical Christmas tree in the public square in the heart of the commercial district, at which sacred music and gifts to the poor of the city were featured. Crowning the Christmas tree a gigantic star was erected blazing its inspiring message of Yule Tide to the thousands who thronged the busy streets during the Christmas season. It is unnecessary to add that such activity has won a warm spot in the hearts of the public.

The offices of the local central station are located on one of the prominent business streets and two large well arranged show windows are given over to the contractor-dealers in rotation for the privilege of displaying their merchandise. Under this plan each dealer has the opportunity of using the window space several times a year.

During the holiday seasons the windows are used under a coöperative plan in which all of the dealers join together and arrange an appropriate community display. Considerable time and money is employed in arranging this display and a large sign is prominently displayed giving the names of all of the dealers who participate.

Naturally the central station has many calls for electrical work and appliances but such inquiries are always referred to the various dealers who have a reputation for dealing fairly with the public.

Up until a few years ago the central station sold and delivered mazda lamps at cost. However, this practice was ultimately found to be unprofitable and unsatisfactory for many reasons, chief among which was that the benefits were abused by many. For several years now the central station has been merchandising lamps on a fair and competitive basis and it has been our experience that the dealers are attempting to sell proper voltages in the right size lamp for the customer. Naturally the results of this policy on the part of the company has been that the major portion of the lamp business has been diverted to the dealers.

I am happy to say that the friendly feeling exists throughout the organizations of the central station and the electragists. Practically everybody knows everybody else personally and intimately, which results in a relationship almost akin to that of a happy family.

WHO carries your Liability Insurance? The National saves you money on this.

Simple Method of Contract Accounting

By J. E. Bullard

New England Electragist Perfects System That is Accurate, Saves Time and Gives Complete Information at a Glance

Drawing from the experience of some thirty years in contracting work, G. E. Bliss, Inc., 80 Florence Street, Malden, Mass., has perfected a system of keeping track of each job which Mr. Bliss has found to prove accurate, save time and show at a glance just how closely the estimate had been made. Every item of labor and material is recorded yet all bookkeeping work is reduced to the minimum.

When Mr. Bliss goes out to figure on a house wiring job he takes with him a small card four by nine inches in size, a size that fits into the pocket or a small case. On the front of this card are spaces at the top for the date, and the name, address and telephone number of the prospect. Below are printed the locations of the outlets such as porch, vestibule, front hall, parlor, living room, and the other rooms, and vertical colums indicate whether these are to be ceiling or bracket outlets, and how many lights, switches, outlets, etc., will be required, and also data about the fixtures. There is also a small space in which data in regard to the service entrance may be recorded.

Minimum Writing

The card is so planned as to require the minimum amount of writing in order to record all the information that is needed to estimate the cost of doing the work with accuracy. The totals at the bottom indicate at once about how much material will be needed and from this it is an easy matter to make a quick estimate, something that is frequently necessary in order to close a house wiring contract at once.

On the reverse side of this card there is a form upon which a preliminary record of the material to be used in the wiring is made. This has a column in which the estimated amount of each class of material is recorded, one in which the amount taken to the job is entered, one in which the names of the kind of material is printed, one in which the amount returned is set down, and one in which the amount used may be recorded. In the last column to the right the cost of the material is entered. On both the front and the reverse of the card there are blank horizontal lines upon which may be written items or locations that have not been printed.

If the estimates have been made with a great enough degree of accuracy, this little card suffices as a complete record of the job, aside from labor up to the time the fixtures are installed. However, since it is not always possible to estimate with so great a degree of accuracy, and owing to the fact that many a house owner after a job is started decides that he wants a little additional work done it has been found advisable to supplement this card with what is called a master and summary sheet.

Master and Summary Sheet

This sheet measures nine and a quarter by fifteen and a half inches and is white. At the top there are spaces for the job number, the name of the customers, and the address. The body of the sheet with the exception of a space three and a half inches wide at the right is ruled into 120 rectangular spaces each space being numbered at the top and each with the exception of spaces 112 to 117 inclusive have some item of expense or material printed at the top of the space. As these spaces are formed by ruling 24 vertical lines, ten horizontal ones, the extra five lines being used beneath the headings in the spaces, there is ample room in each space to enter any data in regard to each item.

On this sheet is kept an accurate record of all material used, all carting, expense, car fare and any miscellaneous expense. In short it serves as a complete classified record of all expense aside from labor up to the time the fixtures are hung.

When the work is completed the cost is summarized in the space at the right which has ruled columns for the quantity, the number, this number referring to the space number, the unit cost, the total cost and the selling price.

When totaled this shows the exact cost of the job as well as the cost of each item. On the reverse side of this end form there is a space for the labor summary which is taken directly from the daily time slips used by the workmen. This summary is also totaled showing the total number of hours at the different rates paid to electricians and helpers and the selling price of this labor.

Complete Summary

Then below this is a summary of the whole job, the material, labor, fixtures, miscellaneous expense, overhead, profit, inspection charges, total, bid and cost. The whole thing is given in both detail and in summary form with the exception of the fixture work. This work is taken care of in detail on another sheet the same size as the master and summary sheet but of a blue color instead of white to avoid confusion. This sheet also has the right hand summary space, printed on the reverse side only, however. The front is divided into fifteen spaces, one space to be used for each room or other location. On the top of the sheet is written the job number, the name and address of the customers. In each of the location space there is a line on which the name of the location may be written, and there are also seven horizontal lines, upon which at the left of each space are printed in the following order the names, holders, sockets, joints, hickey, shades, lamps and sundries, and there are horizontal columns in each space for entering the quantity, style, kind, finish, lights, stud, outlet, remarks, cost of each and total. This means that complete information in regard to the fixtures is recorded for each location. In the summary space on the back is recorded the labor cost both for assembling and for installing, the total material, labor and miscellaneous expense, the overhead, profit, inspection, total, bid and cost. This final summary is the one used in entering the fixture cost on the master and summary sheet.

The two sheets, therefore, give a complete, detailed and classified record of the whole job, making it easily possible to ascertain just where the profit or the loss came from.

Comparing this record with the call card first mentioned, it is also possible to get an ideas of just why the contract did not work out more closely to the first estimate if there is any very great discrepancy, for the call card shows the original estimate in considerable detail. The call card also serves another valuable purpose. The data on the front of the card is filled in on the first call and in case it is not possible to close the deal on this first call, this card serves as an excellent prospect card and also

makes it possible to spend more time in figuring out the cost of the job if this seems desirable.

The daily time slips used are the same size as the call card, with a space for each hour of the working day to indicate what job was worked on and whether it was wiring, jobbing, assembling fixtures, or installing fixture. There is also a column for expenses, and at the bottom there is a space for remarks.

The directions to the men on the job or in the shop working on the fixtures are given on a sheet from an ordinary sales book, a carbon copy being made of this, which, incidentally, is the only carbon used in the whole system. The carbon is made merely to have a record of the instructions to the men in case the originals are lost.

These different sheets, instead of being filed in a book, are kept in a 9½x4¼ inch envelope. The large sheets when folded once across the middle and then folded again across the middle just fit into this envelope. On the outside of this envelope are noted the order number, the date, any other information that should be entered about the job, the place where the work is done, and the nature of the work. There is then a memorandum to be checked when attended to and this includes entrance location, meter located, application filed, inspector notified, general details of job, detail wiring, detail fixture sheet, test made, completed, bill sent. There is also a space to note what is necessary to complete the job and the date when the New England Insurance exchange was notified. The envelope not only contains all the data connected with the job but the memorandum on the outside shows the state of it at any time during its completion so that it is not necessary even to open it to see just how the work is progressing. These envelopes are also of a convenient size to file away.

The cost of having the original forms printed was considerable, but they have already saved enough time and money to make that cost a good investment. Duplicate forms will probably be made from electrotypes thus cutting down the cost very materially.

The Why of Your Trade Paper

By W. H. Carr

Briefly Telling the Story of the Reason Any Trade Paper Exists—and Some Convincing Comparisons With Proof

Much has been said in behalf of and in defense of perhaps the Trade Journal. To the editor pioneers in the development of the different industries has come recognition for their beneficent endeavors in the form of an industry within an industry, that is, the trade press within each territory.

The best argument in behalf of a trade journal is the vast support it receives in practically every line of trade which it serves. There is much interest in the many circumstances and events leading to the unprecedented demand for all trade publications.

One of the first considerations concerning the need and the opportunity for service by a trade publication is the fact that every industry however small has something in common among its constituents. Human nature even in business cannot get away from that desire to mingle—it is nothing short of clannish—so to speak. Suffice it to say that a trade publication is the gossip of the Guild.

There being a natural demand for such a medium, a hurried review of the function of and the direct results that journals of this character render will serve to alleviate the minds of the few who so far have refused to acknowledge the Trade Press' worth to them.

A recent article by Charles T. Hutchinson of Mining and Scientific Press, writing in Western Advertising, compares the trade paper with the newspaper and the fiction press. There is a well defined distinction between these three classes of publications. In this comparison, Mr. Hutchinson says in part:

"There is an outward appearance that makes all classes of publications look alike. All must have editors, advertising departments, and production departments. But that is as far as the resemblance goes. The minute the investigator begins to delve beneath the surface, the clearer the line of demarcation becomes."

The layman might not grasp this so clearly but practically every business man who of necessity must use two of the three classes of publications, and all do use the three, there will be no difficulty in seeing just what the distinction is. For as Mr. Hutchinson's article continues:

"In ideals, concepts, viewpoint and every other detail, trade and general publications are as far apart as the poles." True it is, "both trade and general publications have their homestead in The Fourth Estate and rightfully so; indeed, it would be a dull and prosaic world without both."

The distinction comes in the type of service rendered in either class of publication and advertising plays a valuable part in determining the same in that "Advertising in the trade press is sold as a service; in the general publications as a commodity."

"A newspaper," continues the article quoted above, "offers to its advertisers subscribers in bulk. Quantity is the only requirement. Who they are does not enter into the consideration. In fact there is no practical way of determining who they are. They are not classified by either vocation or financial rating. They can only be measured in quantity."

"A newspaper and the periodical of general appeal differ in that the latter is generally national in its scope and reaches a higher intellectual and financial stratum among the reading public." This may be owing to the higher cost and perhaps more painstaking makeup as to material used and manner of presentation.

A trade publication reaches a select body of readers and its message is concentrated upon those to whom it is of immediate interest or value; it reaches one trade and its allied interests.

From an advertising standpoint a general publication serves more as propaganda for whatever products it may advertise. On the other hand the advertising department of a trade publication is a medium of exchange where the most urgent needs of any one industry may be supplied quickly and with a guarantee of satisfaction. This factor has been proven over and over. Huge sales volumes have emanated from trade press advertising for the simple reason that the message of the producer has struck the first source of distribution—the dealer.

Such a demonstration of the value

Simple Method of Contract Accounting

By J. E. Bullard

New England Electragist Perfects System That is Accurate, Saves Time and Gives Complete Information at a Glance

Drawing from the experience of some thirty years in contracting work, G. E. Bliss, Inc., 80 Florence Street, Malden, Mass., has perfected a system of keeping track of each job which Mr. Bliss has found to prove accurate, save time and show at a glance just how closely the estimate had been made. Every item of labor and material is recorded yet all bookkeeping work is reduced to the minimum.

When Mr. Bliss goes out to figure on a house wiring job he takes with him a small card four by nine inches in size, a size that fits into the pocket or a small case. On the front of this card are spaces at the top for the date, and the name, address and telephone number of the prospect. Below are printed the locations of the outlets such as porch, vestibule, front hall, parlor, living room, and the other rooms, and vertical columns indicate whether these are to be ceiling or bracket outlets, and how many lights, switches, outlets, etc., will be required, and also data about the fixtures. There is also a small space in which data in regard to the service entrance may be recorded.

Minimum Writing

The card is so planned as to require the minimum amount of writing in order to record all the information that is needed to estimate the cost of doing the work with accuracy. The totals at the bottom indicate at once about how much material will be needed and from this it is an easy matter to make a quick estimate, something that is frequently necessary in order to close a house wiring contract at once.

On the reverse side of this card there is a form upon which a preliminary record of the material to be used in the wiring is made. This has a column in which the estimated amount of each class of material is recorded, one in which the amount taken to the job is entered, one in which the names of the kind of material is printed, one in which the amount returned is set down, and one in which the amount used may be recorded. In the last column to the right the cost of the material is entered. On both the front and the reverse of the card there are blank horizontal lines upon which may be written items or locations that have not been printed.

If the estimates have been made with a great enough degree of accuracy, this little card suffices as a complete record of the job, aside from labor up to the time the fixtures are installed. However, since it is not always possible to estimate with so great a degree of accuracy, and owing to the fact that many a house owner after a job is started decides that he wants a little additional work done it has been found advisable to supplement this card with what is called a master and summary sheet.

Master and Summary Sheet

This sheet measures nine and a quarter by fifteen and a half inches and is white. At the top there are spaces for the job number, the name of the customers, and the address. The body of the sheet with the exception of a space three and a half inches wide at the right is ruled into 120 rectangular spaces each space being numbered at the top and each with the exception of spaces 112 to 117 inclusive have some item of expense or material printed at the top of the space. As these spaces are formed by ruling 24 vertical lines, ten horizontal ones, the extra five lines being used beneath the headings in the spaces, there is ample room in each space to enter any data in regard to each item.

On this sheet is kept an accurate record of all material used, all carting, expense, car fare and any miscellaneous expense. In short it serves as a complete classified record of all expense aside from labor up to the time the fixtures are hung.

When the work is completed the cost is summarized in the space at the right which has ruled columns for the quantity, the number, this number referring to the space number, the unit cost, the total cost and the selling price.

When totaled this shows the exact cost of the job as well as the cost of each item. On the reverse side of this end form there is a space for the labor summary which is taken directly from the daily time slips used by the workmen. This summary is also totaled showing the total number of hours at the different rates paid to electricians and helpers and the selling price of this labor.

Complete Summary

Then below this is a summary of the whole job, the material, labor, fixtures, miscellaneous expense, overhead, profit, inspection charges, total, bid and cost. The whole thing is given in both detail and in summary form with the exception of the fixture work. This work is taken care of in detail on another sheet the same size as the master and summary sheet but of a blue color instead of white to avoid confusion. This sheet also has the right hand summary space, printed on the reverse side only, however. The front is divided into fifteen spaces, one space to be used for each room or other location. On the top of the sheet is written the job number, the name and address of the customers. In each of the location space there is a line on which the name of the location may be written, and there are also seven horizontal lines, upon which at the left of each space are printed in the following order the names, holders, sockets, joints, hickey, shades, lamps and sundries, and there are horizontal columns in each space for entering the quantity, style, kind, finish, lights, stud, outlet, remarks, cost of each and total. This means that complete information in regard to the fixtures is recorded for each location. In the summary space on the back is recorded the labor cost both for assembling and for installing, the total material, labor and miscellaneous expense, the overhead, profit, inspection, total, bid and cost. This final summary is the one used in entering the fixture cost on the master and summary sheet.

The two sheets, therefore, give a complete, detailed and classified record of the whole job, making it easily possible to ascertain just where the profit or the loss came from.

Comparing this record with the call card first mentioned, it is also possible to get an ideas of just why the contract did not work out more closely to the first estimate if there is any very great discrepancy, for the call card shows the original estimate in considerable detail. The call card also serves another valuable purpose. The data on the front of the card is filled in on the first call and in case it is not possible to close the deal on this first call, this card serves as an excellent prospect card and also

makes it possible to spend more time in figuring out the cost of the job if this seems desirable.

The daily time slips used are the same size as the call card, with a space for each hour of the working day to indicate what job was worked on and whether it was wiring, jobbing, assembling fixtures, or installing fixture. There is also a column for expenses, and at the bottom there is a space for remarks.

The directions to the men on the job or in the shop working on the fixtures are given on a sheet from an ordinary sales book, a carbon copy being made of this, which, incidentally, is the only carbon used in the whole system. The carbon is made merely to have a record of the instructions to the men in case the originals are lost.

These different sheets, instead of being filed in a book, are kept in a 9½x4¼ inch envelope. The large sheets when folded once across the middle and then folded again across the middle just fit into this envelope. On the outside of this envelope are noted the order number, the date, any other information that should be entered about the job, the place where the work is done, and the nature of the work. There is then a memorandum to be checked when attended to and this includes entrance location, meter located, application filed, inspector notified, general details of job, detail wiring, detail fixture sheet, test made, completed, bill sent. There is also a space to note what is necessary to complete the job and the date when the New England Insurance exchange was notified. The envelope not only contains all the data connected with the job but the memorandum on the outside shows the state of it at any time during its completion so that it is not necessary even to open it to see just how the work is progressing. These envelopes are also of a convenient size to file away.

The cost of having the original forms printed was considerable, but they have already saved enough time and money to make that cost a good investment. Duplicate forms will probably be made from electrotypes thus cutting down the cost very materially.

The Why of Your Trade Paper

By W. H. Carr

Briefly Telling the Story of the Reason Any Trade Paper Exists—and Some Convincing Comparisons With Proof

Much has been said in behalf of and in defense of perhaps the Trade Journal. To the editor pioneers in the development of the different industries has come recognition for their beneficent endeavors in the form of an industry within an industry, that is, the trade press within each territory.

The best argument in behalf of a trade journal is the vast support it receives in practically every line of trade which it serves. There is much interest in the many circumstances and events leading to the unprecedented demand for all trade publications.

One of the first considerations concerning the need and the opportunity for service by a trade publication is the fact that every industry however small has something in common among its constituents. Human nature even in business cannot get away from that desire to mingle—it is nothing short of clannish—so to speak. Suffice it to say that a trade publication is the gossip of the Guild.

There being a natural demand for such a medium, a hurried review of the function of and the direct results that journals of this character render will serve to alleviate the minds of the few who so far have refused to acknowledge the Trade Press' worth to them.

A recent article by Charles T. Hutchinson of Mining and Scientific Press, writing in Western Advertising, compares the trade paper with the newspaper and the fiction press. There is a well defined distinction between these three classes of publications. In this comparison, Mr. Hutchinson says in part:

"There is an outward appearance that makes all classes of publications look alike. All must have editors, advertising departments, and production departments. But that is as far as the resemblance goes. The minute the investigator begins to delve beneath the surface, the clearer the line of demarcation becomes."

The layman might not grasp this so clearly but practically every business man who of necessity must use two of the three classes of publications, and all do use the three, there will be no difficulty in seeing just what the distinction is. For as Mr. Hutchinson's article continues:

"In ideals, concepts, viewpoint and every other detail, trade and general publications are as far apart as the poles." True it is, "both trade and general publications have their homestead in The Fourth Estate and rightfully so; indeed, it would be a dull and prosaic world without both."

The distinction comes in the type of service rendered in either class of publication and advertising plays a valuable part in determining the same in that "Advertising in the trade press is sold as a service; in the general publications as a commodity."

"A newspaper," continues the article quoted above, "offers to its advertisers subscribers in bulk. Quantity is the only requirement. Who they are does not enter into the consideration. In fact there is no practical way of determining who they are. They are not classified by either vocation or financial rating. They can only be measured in quantity."

"A newspaper and the periodical of general appeal differ in that the latter is generally national in its scope and reaches a higher intellectual and financial stratum among the reading public." This may be owing to the higher cost and perhaps more painstaking makeup as to material used and manner of presentation.

A trade publication reaches a select body of readers and its message is concentrated upon those to whom it is of immediate interest or value; it reaches one trade and its allied interests.

From an advertising standpoint a general publication serves more as propaganda for whatever products it may advertise. On the other hand the advertising department of a trade publication is a medium of exchange where the most urgent needs of any one industry may be supplied quickly and with a guarantee of satisfaction. This factor has been proven over and over. Huge sales volumes have emanated from trade press advertising for the simple reason that the message of the producer has struck the first source of distribution—the dealer.

Such a demonstration of the value

UMI

of the trade press in producing sales distribution in volume was made in the recent campaign of the Dayton Fan and Motor Co. It was found that this company was face to face with the problem of how to create a domestic demand for their fans, etc., to replace their foreign demand, owing to the war conditions.

There was but one solution, and that either to suspend operations or create a domestic demand. Their competitors were spending money lavishly on huge advertising programs. The Dayton company's finances were limited, and demanded economy.

The Trade Press was used; a well defined and well organized plan was prepared. Color and double page spreads were used directing the dealers' attention to Dayton products. The theory behind the idea was the aptitude of the general buying public to take the word of the dealer on technical facts rather than to depend entirely upon general advertising suasion.

Another campaign of note was the placing on the market by the Gillette people a new type of razor. The trade press was used extensively in presenting to the dealer the new razor and its mrchandising plan. Each class of trade handling Gillette razors was reached through its individual publications. The hardware dealers reading their own periodicals received the hardware message while the jewelers and druggists received a message directed to them. It is readily seen that the hardware merchant's plan of merchandising would differ with that of the druggist or jewelry man. The hardware man would market his razor from the dealer's point of view, a necessary stock; the druggist would market razors as a side line, looking to service in conjunction with cosmetics and shaving lotions. The jeweler would look at the razor from the standpoint of the gift shop or perhaps a specialty.

The Gillette campaign was a huge success and thousands of the new model razors were placed in the hands of users throughout the country by the use of the Trade Paper space.

So says a double page spread in Class, a publication for advertisers, telling of the worth behind the trade publications as developed in the campaign being conducted by The Associated Business Papers. Comparison again is used here to demonstrate the application of power in the automobile of the "one lung" variety against that of the modern motor. The old type of single cylinder engine had power equal to any modern engine but its application was intermittent and inefficient. The multiple cylinder engine of today has no greater power but its application is continuous and effective. Advertising is power, and your Trade Paper is the multiple cylinder engine. Its operation is concentrated, continuous and effective.

Summing up the whole matter of trade paper service and that of the general press, we can arrive at but one conclusion; that reached by the writer mentioned in the foregoing:—"The general press appeals to the senses, while the trade press appeals to the sense."

Arranging Your Displays

By E. F. Newkirk

Publicity Expert of Edison Lamp Works Gives Valuable Hints

Every house wired for electricity is a positive benefit to several people. Besides the occupants of the home, the electrical contractor-dealer, the central station, and the manufacturer all benefit.

From the electrical contractor's point of view the benefits the householder receives are the ones for him to feature through his show window advertising.

The increased value of electrically wired houses over those not wired, the comfort and cleanliness of electricity in the home, the improved methods of doing and saving time in household tasks, as well as the cheerfulness of a well lighted home are the most important things to feature in your displays.

You should work with the householder's point of view in mind for that will bring quicker and better results. Every house wired is a boost for the dealer and his store. The business he gets and the profits he derives from the sale of fixtures, lamps, washing machines, toasters, cleaners, and many other things make him realize the benefits to be derived from every house he wires.

Keep everlasting after house wiring prospects, but do not neglect your show window, for that is the best salesman you have. Change your window displays often, and do not crowd them. Good displays work for a store every minute of the day, and as long as there are people on the street, in the evening as well.

Poor crowded displays are confusing and are a handicap to any store. Window displaying is an art. It requires thought, skill and many other considerations.

In the display shown below, for example the more important points are carefully worked out and you do not have to "reason why." The show cards and their six reasons show so clearly in the display it seems unnecessary to repeat them here.

Take this suggestion to your local sign shop and have them make the cards of a size to fit your window. Then go back and lay out your merchandise. The plateau shown in the center is only a flat box about two by three with some blue material draped over it.

Cards 2, 3, 4, 5, and "Reasons Why, etc.," are tacked on the front pedestal which support the percolators and lamp cartons. Cards numbers 1 and 6 rest on the floor and are held in a perpendicular position, as are the other cards. Show cards always look neater and snappier when held in this way than when they are allowed to curve and bend in awkward shapes. Paper doilies are used under the appliances to give a home touch to the display.

It has been said that there are fifteen million homes in the United States to be wired. Let your show window help you wire your share.

Here is a Suggestion for a Well Balanced Window Display Described Above

Better Show Case Lighting

By E. J. Friedrich

Suggestions From Lighting Expert of National X-Ray Reflector Company

The principle that displaying goods properly increases sales is recognized by nearly all of the world's leading business men.

It is evident that to give the display case the display value it should have, goods should be lighted to a greater intensity than the surroundings. Formerly merchants tried to illuminate their wares by putting in larger unshaded lights, but this illumined the floor and store surroundings as well, and the contrast which might be secured by the additional light was lost.

The heavy wood frame with a wide top rail which obstructs much of the view of the display and behind which the old form of lighting equipment could be somewhat concealed is being rapidly replaced by all glass or narrow wood framed cases. Merchants realize that every inch of display area is valuable and for this reason many of the more progressive store owners have been looking for an efficient lighting device which will permit full view of the display and still light it to the desired intensity without glare.

The great demand for lighting equipment of this kind has induced manufacturers to make tests and experiments along this line. Considering both the principles of correct lighting and the rules of show case display a new device has been recently perfected which does away with many of the objectionable features of the old type lighting.

The device consists of a small specially designed blown glass silvered re-

Diagram Showing How Light Should be Kept Within Case

flector of very high efficiency, housed in a well proportioned brass cover which is attached to a special small side outlet socket. A number of these units—according to the degree of brightness desired—are connected by a ⅜ inch brass tube with the use of a very small body having a removable cover or bottom to facilitate the wiring. This equipment is securely fastened in the upper front corner of the case, the electric wires running to the switch, located in the base at the back of the case, being carried in a ⅜ inch brass tube or a very small flexible conduit. This makes a very simple and complete installation.

The small size of this equipment and its being beautifully finished in black nickel, which blends with the glass where it is joined, renders it less noticeable than any other device used for show case lighting, and causes the least obstruction to a view of the merchandise displayed in the case.

Probably G-18½, candelabra base, 15 watt lamps are the best to use in these reflectors. The sockets are arranged so lamps burn in the pendant position, insuring very long life and permitting the successful use of Mazda lamps. Lamps burning in this position are better able to withstand the jar caused by opening and closing the sliding doors of the case. It naturally follows that the lamps will give longer service, thus reducing the cost of upkeep.

The reflectors are designed so as to protect the eyes of customers and salespeople by covering the lamp so it cannot be seen either from the front or back of the case. Being rigidly attached it is impossible for the socket to become loosened or lamps to sag below the reflector, thereby distracting the customer's attention from the display.

A powerful reflecting surface of pure silver coupled with correctly shaped reflectors produces, with 15-watt lamps, a higher degree of brightness and a more uniformly distributed light in the case than is obtainable with 25 watt lamps for example.

Display Cases Properly Lighted Create a Desire to Buy the Goods Displayed

The completeness of this equipment, the small space it occupies, the case with which it is installed, and the fact that it does not mar or disfigure the finest all plate case has made it popular.

Selling to the Housewife

By S. W. Bishop

It is up to Electragists to Teach Women Value of Electric Appliances

More and more are thinking people applying scientific management to the conduct of their homes. It is because they appreciate the possibilities of economical administration, the reduction of operating and overhead expenses.

Is not home management as much of a necessity as sound management of a business? Recent experiences of a national bank in Denver proves that it is —likewise that interest is rapidly increasing in the subject.

Reports of these experiences show that electricity in the home is one of the biggest factors in bringing this condition about. Economic depression unquestionably leads people to conserve and practice more thrift especially in the conduct of the home but the fact remains that it is primarily through education that new and improved ways of doing things are developed.

When the Denver bank asked for experiences in budgeting and household accounting, it was with the view of enlarging its own business, of securing additional accounts after the valued possibilities of its special service had been discerned. Cash prizes were paid for the best bona fide experiences. It is interesting to note that in nearly every case some reference was made to the use of electricity.

Unsolicited Testimonials

In order that a fuller appreciation may be had of the direct references to electricity, some representative excerpts follow: "Our biggest saving is in operation. With the use of a washing machine, vacuum cleaner, sewing machine, electric iron and other modern conveniences, outside help is dispensed with." "Use electric washer and mangle. We will soon have this equipment paid for in what has been saved from not hiring laundress with the attendant expense of her lunches and carefare." "Our expense for operation has been low for the reason that our house is new and equipped with electrical conveniences, such as a sweeper, sewing machine, ironer, etc. I would rather do my own housework with these labor saving devices than to hire outside help."

According to the figures submitted with this last experience, the electricity consumed for all purposes during the first eleven months of 1921 was $25.90, or less than one percent of the total household expense for that period.

It should be borne in mind that these experiences were not submitted for capitalization by the electrical industry but on account of the almost invariable reference to the use of electricity and the results obtained in the various experiences, the bank provided a fund of information which the electrical industry can value as unsolicited expressions of opinion.

Adjusting Expenses to Income

The bank in issuing an elaborate circular on these experiences—from the electrical industry's viewpoint they are testimonials—stated that it was published for the information of those who are studying how best to adjust their expenses to their incomes during the present year.

And therein lies a big selling point for the electragist. Nearly every housewife must occasionally make such adjustment of expenses and it is *then* when they should be sold on the electrical home idea. The quoted experiences all specifically refer to the lessened cost of operation of the household through the use of electrical equipment and that is the idea which can be valuably used by the progressive electrical merchandiser.

Salesmen for all types of electrical household appliances can well afford to capitalize and make this feature the main point in their general sales talks. The voluntary expressions received from Denver housewives shows that this is the phase in which thrifty women are especially interested at this time.

Analysis of a slow market will generally show a vulnerable point of attack. Reduction in operating expense to meet the lessened monthly check or weekly pay envelope therefore is the point of primary weakness.

Women Are Country's Buyers

Moreover when we are told that women are the country's buyers, it behooves every mother's son in the electrical business to carefully digest the fact. A prominent household economist says that women buy 48.4 percent of all merchandise for family use and have an important voice in selecting 23 percent more, making a total of 71 percent bought by women. The man in the average electrical merchandise establishment can appreciate this fact when he knows that close to 80 percent of all electrical merchandise is sold to women.

It is also admitted that the vast list of prospective purchasers is that of the middle class—not the ultra rich nor the poor—but the group having an income which makes possible the fullest enjoyment of home life. That income can be made to go further through the use of electricity in the home, and it's up to the industry especially the electragist to point the ways and means—to sell the appliances—which will reduce the household operating expenses.

Conservation of time, labor, health and money are possible through the use of electric appliances in the home but at this time the last factor—money —as expressed in reduced operating expense, should be stressed to every housewife.

Preach the thrift gospel to the public. Show the housewife how she can be rendered a real service.

They Do Look Alike

James E. Wilson, the genial electragial secretary of Boston, was telling the following humorous incident at a recent convention:

Some time ago he said he was making a trip up to Halifax, Nova Scotia, and in the smoking compartment of the Pullman at various times during the journey he conversed with a white haired, bushy bearded gentleman who seemed to remind him of somebody he had met before. At last Mr. Wilson recalled the resemblance and said to the gentleman:

"Do you know you look very much like Alexander Graham Bell?"

"Yes," replied the man, "that's what my wife tells me."

"Well, it does seem strange that two men should so closely resemble each other," said Wilson.

"But there are not two men," replied the bushy bearded gentleman, "for I'm Alexander Graham Bell."

And sure enough it was, Prof. Bell himself, making a trip up to his Nova Scotia farm, and Jim Wilson never will recover from the surprise it gave him.

UMI

·CONTRACTING·

A Department Devoted to the Study and Discussion of the Practical Problems of Electrical Contracting

ALLAN COGGESHALL Associate Editors HENRY F. RICHARDSON

Push Button and Annunciator System

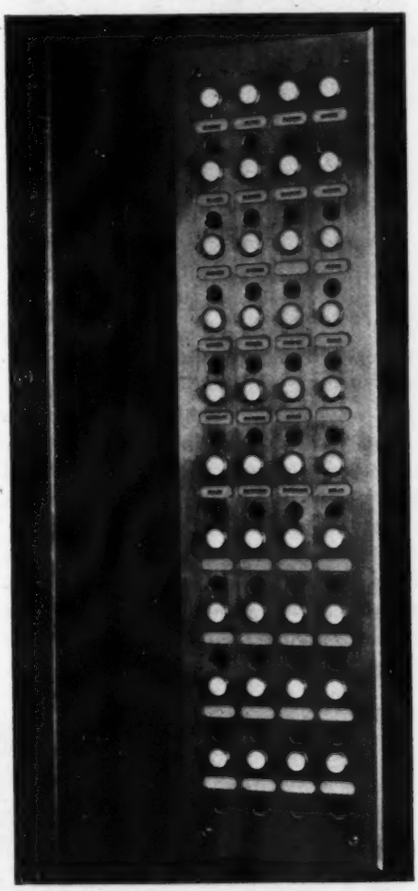
In the last two articles we have described methods of distribution which apply to other signalling systems as well as to a push button system.

We have recommended in a general way that the highest grade of material be used in signalling systems and have pointed out the importance of giving real consideration to the distributing system in order to reduce the usually high maintenance cost and to facilitate changes. This is of great importance in a push button system of any size because of the congestion of wires and connections at many points.

Lead covered, silk and cotton insulated cables are to be recommended whenever ten or more wires are to be installed from one point to another. The lead cable may cost a little more to install than single wires or may cost a little less depending on the size, but once properly installed and terminated a lead cable can almost be forgotten. Where lead cables are installed it is to be recommended that a number of spare conductors be allowed, for the additional cost is small and the advantage is obvious. Of course where even a large number of wires leave an interconnection box but distribute in groups of four or five wires to a number of locations, cables cannot generally be used to advantage.

However, where loose wires are to be used it is recommended that they be rubber insulated and of the highest grade. An insulation thickness of 1/32″ is preferable to a thickness of 1/64″ which is sometimes used 30% Para grade insulation is recommended; also a hard finished glazed braid rather than an impregnated braid as this allows a greater number of wires to be drawn into a conduit. Such wires may be ordered in different colored braids, in solid colors or combinations, and this greatly simplifies the work on original connection as well as in making future changes or in looking for trouble.

Lead covered silk and cotton insulated cables should always be connected at both ends to proper terminal strips. Various types of terminal strips are described in a previous article. Where one end of a cable connects direct to an annunciator or other apparatus, such apparatus should be provided with



No. 40 Drop Lamp Annunciator With Individual Reset Buttons

proper terminals. Particular care must be taken where a lead covered cable leads to apparatus which is located on a desk or other portable furniture. In such cases the lead cable should never be carried direct to the apparatus unless the desk is screwed down to the floor, and even that is objectionable.

Where connected from the wall the lead cable may be terminated on strips in a box attached to the wall and a flexible cable carried from the strips to the apparatus on the desk. Where connected from the floor a short piece of pipe may be extended up from the floor outlet with strips mounted on a light flat iron frame attached to the pipe. The flexible cable may then be extended to the desk as from the wall outlet. Auth separable connectors may also be used to advantage in both cases.

Annunciators may be had in many types and grades. Again the highest grade will be found to be the least expensive in the long run. Annunciators may be generally classified as lamp type and target type. The target type may be either electric or mechanical reset. The electrical reset type may be either reset by the operation of a reset button or may be "automatic reset" type in which when any drop is operated, any drop previously operated is automatically reset. Lamp type annunciators are usually electrical reset. Electrical reset annunciators may be "individual reset" type with a reset button for each drop, or may be arranged with a single reset button for the entire annunciator or with several buttons for groups of drops.

Where a single button is provided for an annunciator, the annunciator may be connected so that when the button is operated current will flow in the reset windings of all drops whether set or not or the annunciator may be arranged with a "reset bus" with which the reset winding of a drop is in contact only in the operation position. In this way only the drops which have been operated will receive the reset current. This saves current but adds a moving contact to each drop which is a potential source of trouble. Other things being equal the question of current consumption of an annunciator drop is important especially where a system is to be operated by day cells. Current consumption must also be considered in the size of wires to an annunciator located at a distance from the source of current. A drop of only a few volts in the common wire or the reset wire may seriously affect the operation of the annunciator.

UMI

Great care should be used in wiring annunciators in multiple, that is where the same indication is to show on two or more annunciators. Many times annunciators have been so connected and it has been found that only one will operate properly. This is generally due to the wires between the annunciators being too small. Obviously the resistance of the circuit to the annunciator farthest away from the supply is greater than that of the nearest annunciator and the current will be shunted through the nearest annunciator if the leads are not of ample size. It will generally be found sufficient to use larger size battery leads only to both annunciators although if the distance to one annunciator is great all the section wires to both annunciators should be increased in size.

Lamp type annunciators have a number of advantages as well as disadvantages as compared to the target type. They give a more readily distinguishable indication than the target type and one which may be seen from any angle. They are generally of much better appearance than the target type, and if the relays are installed in a cabinet separate from the annunciator as they should be for accessibility, the size for a given number of indications is much smaller than for other types. Size and appearance are often of great importance, for instance, in a banking room with marble walls.

On the other hand, lamp type annunciators are generally more expensive than other types and are more likely to get out of order. The relays alone are more likely to require attention than a good target drop and of course the lamps will burn out and have to be replaced. Do not use screw type lamps in locations subject to vibration or jars as on the walls of a bronze entrance vestibule for instance as the screw type lamps will loosen. In such locations "jack type" lamps as used on a telephone switchboard are better. It is well to have opalescents covering lamps removable from the front and of such size that the lamp may be removed from the front by first removing the opalescent. Relays where installed in a cabinet separate from the lamps, may be located so as to be easily accessible for adjustment, etc.

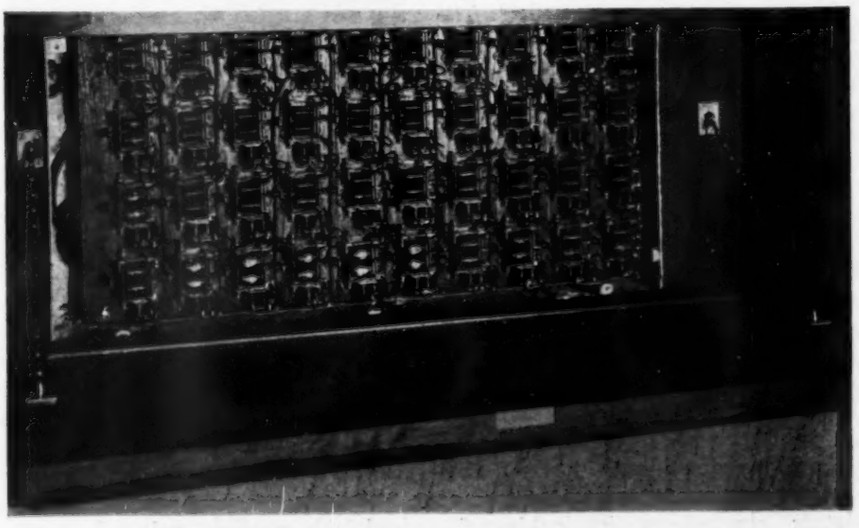
Electrical reset target type annunciators are generally more expensive than the mechanical reset type but for most uses they are to be preferred. Mechanical reset annunciators are often handled roughly for instance by an office boy who thinks it clever to hit the reset button with a roll of drawings, an umbrella or anything else he may happen to have in his hand, or a call on an annunciator may disturb a stenographer while reading an interesting story and she "takes it out" on the reset button of the annunciator.

Lamp Annunciator Set in Pages' Table. Note Flexible Cable From Wall Outlet Which is Provided With Separable Connectors

This is a very real objection to this type of annunciator and they are frequently out of order from abuse. This is not possible with the electric reset type. With the electric reset type individual or group reset buttons may be provided. This is often very important as in the case of an errand boy annunciator. At times there will be more calls indicating on the annunciator than there are boys to answer them. If there is only one reset button a boy who is answering one call will reset others and therefore leave no record. Reset buttons may if desired be installed in a separate location from the annunciator or reset buttons may be provided at two or more locations. In a stenographer's room for instance, the most easily seen location for the annunciator may be such that a stenographer in answering a call would have to walk a distance out of her way in order to reset the annunciator if the buttons were at the annunciator.

However, if the buttons are separate the annunciator may be placed in the most desirable location and the reset buttons near the door through which the person answering the call must pass. Annunciators are frequently furnished with designation printed on long strips, several names to a strip. This is objectionable as the designations will change from time to time and if a number of designations are on one strip the change is more difficult. Individual designations are to be recommended and these should be easily removable.

The selection of push buttons for a call bell system should receive proper attention. There are quantities of flimsy buttons on the market which are often used because of low price. The amount saved by using such buttons will be more than spent in replacements in a short time. Buttons of substantial con-



Relays for Annunciator Shown in No. 1. Relays Are Easy to Get at and Size of Annunciator is Considerably Reduced by Installing Relays in a Separate Box

struction and with terminals of ample size should be selected.

Desk mats are frequently furnished by a contractor for all buttons on desks. Where there are only one or two buttons on each desk there is usually no objection on the part of the owner to installing individual buttons in the edge of the desk. This is a better arrangement as a mat on top of a desk is always in the way or else lost among papers and is also cheaper for the contractor. Where a desk mat is objected to by an owner and there are too many buttons to set individually in the edge of the desk, buttons may be installed in a place which may be set inside a drawer. A flexible loop must be provided in the cable to the drawer and a stop placed on the drawer so that it cannot be entirely pulled out.

Where there are several separate pieces of apparatus on a desk a problem is sometimes presented in terminating flexible cables. If a separate cable be installed to each piece of apparatus the result is unsightly and if a single cable is installed for all connections then this cable must be made long enough for the longest connection, part of the covering removed and the cable separated into several parts. This may often be simplified if there are a number of connections by installing a single cable and terminating this on a terminal strip screwed to the desk. Wires which need not generally be flexible may then be installed from the terminal strip to the apparatus.

CODE CHATS

By HUBERT S. WYNKOOP, M.E.

Monthly Discussion of National Electrical Code Practices by Well Known Authority in Charge of Electrical Inspection, City of New York

Service Switches

A careful reading of the 5th paragraph of No. 24a will show that it relates to 3-wire direct current services and to 3-*wire* alternating current services. The words "single phase" seem to set many inspectors astray, as they mentally picture a 2-*wire* circuit, overlooking the words "with grounded neutral," which imply three wires. As a matter of fact the alternating current service here considered is one which is supplied by a transformer having a neutral tap or by a pair of transformers with a neutral point lying between them.

The provision that one outside wire may be opened independently of the other is to permit the placing of a new fuse on dead terminals without the necessity of cutting current off the unblown side.

Outlet Boxes With Cramped Splicing Chambers

We are somewhat perplexed over the outlet box situation. There are plenty of ample boxes on the market, and they are generally adaptable to the wiring of new buildings. In the wiring of old buildings, however, armored cable is generally used in connection with approved so-called outlet boxes which are in reality nothing but plates. Some contractors go so far as to drag their work on a new building in order that the lath may be in place before the plates are put in. The latter are then merely screwed to the lath.

Some improvement in this situation is much to be desired, and the subject is receiving earnest attention.

Attix Wire

How many of the younger generation are acquainted with the good old Attix wire which had so much vogue some fifteen years ago? This product consisted of red-core Habirshaw over which was woven the equivalent of a flexible tubing. The wire then had a diameter nearly equal to that of a 2-conductor armored cable. For dry places, as a substitute for concealed knob-and-tube work, it was nearly ideal, because it could be properly strapped into place and would remain as placed. It was particularly adapted to the wiring of old frame buildings; but it gave way in the end to armored cable which offers a greater resistance to mechanical injury.

Switches For Small A. C. Motors

Motors used to operate meat choppers, coffee grinders, etc., are often rated at ¼ h. p., although they take from 20 to 25 amperes at starting. In a number of cases we have found that a 10 ampere switch is not suited to the control of such a motor, because it breaks down if the circuit is opened before the motor has gained full speed. For this reason, a 20 ampere switch is the smallest which should be used.

Armored Cable Passing Through Floor

It is the practice to require the placing of an iron pipe sleeve over armored cable passing through a floor. This is to guard the cable from water which may be used for washing the floor. Where the cable comes up back of a baseboard, however, there seems to be no good reason for insisting on the sleeve.

Service Boards for Combined D. C. and A. C.

Where direct current and alternating current services are brought into the same premises it is preferable to place the respective service devices on separate panels. In those rare cases where this is impracticable, resort should be had to suitable barriers to separate the two systems.

It must not be overlooked, however, that where break-down switches are employed to transfer all or part of the load from one service to the other, the switch spacings will determine the amount of separation that can exist between the two systems.

Unfused Lamp Receptacle in Cabinet

Sometimes a lamp receptacle, connected directly across the panel busbars, is placed in a cabinet in order to facilitate the work of refusing. It is claimed that the device is so nearly self-contained and is so situated in the metal cabinet that a short circuit can have no other effect than to destroy the receptacle. There has always been a question, however, as to whether or not the unfused receptacle should be approved. The most modern installations do not introduce this question.

Circuit Breakers For Fire Pumps

While the Code accepts either fuses or circuit breakers as protection for motors generally, contractors should guard against installing fuses for fire pump motors. It is the general practice of fire authorities to insist upon circuit breakers because they can be quickly reset in an emergency, which is the very time when the pump is needed.

Lights in Transformer Vaults

Occasionally someone tries to persuade us to approve a small transformer vault which is not provided with any means of artificial illumination. The claim is made that the Code does not require the vault to be lighted. Anyway, we insist on a light.

Extra Outlets in Garage

There is nothing in the Code which requires an outlet in a garage for a trouble lamp. But we find that when there is only one outlet, and that at the ceiling, a double socket or a current tap is used and a line of cheap flexible cord run for a portable lamp. After a little while the ceiling outlet is in bad shape and the cord "worn to a frazzle." So we insist on a wall outlet for a portable lamp and usually get it. Where the contractor or owner stands upon a technicality, we issue a certificate for the one light, and so limit the certificate that the objector is glad to come back with a new application for the additional outlet.

Lunch Wagons

When is a lunch wagon a "building?" We need to know, because these wagons come to town wired in wooden raceway, which we do not permit. Following what is I believe a court ruling, we say that if the wagon is placed on a building lot, adjacent to other buildings and rendered more or less permanent by a bulkhead built around the running gear, and has a flight of steps attached, it becomes a "building."

Inclosed Motors

The Code calls for the inclosure of a motor having brushes or sliding contacts if located in a dusty or linty place, and for the inclosure of even a squirrel cage motor under extreme conditions such as prevail in flour mills, etc.

Now there are two ways of inclosing a motor: (a) by putting it in a housing or box and (b) by so designing it that the frame itself provides the inclosure.

If a housing is used, it is not always practicable to ventilate to "outside clean air;" and without ventilation the inclosure is apt to act as a trap for combustible material. If the motor is of dust-tight design it must be relatively large for its rating; and there is a tendency to class a motor with fine wire mesh guards over the ends as a totally inclosed motor.

We need a specification covering the construction of an approved inclosure, and a definition of an inclosed motor. Neither Code requirements nor current practice are as closely set forth as they might be.

WHEN you want information or data write the National Office. It is maintained for your use.

Cost Finding and Cost Control

By HARRY C. TURNOCK

Well Known Authority of Cleveland Believes Electragist Should Be Scientifically Trained in Making Estimates

Practically every manufacturing concern of any consequence in the United States has developed, to a more or less high state of perfection, a cost-finding and a cost-control system. The manufacturer knows what each part of an article costs, and is able to forecast, with almost microscopic precision, what the *finished article* will cost. He has only to add the indirect cost of his manufacturing, executive, and sales departments respectively, and afterward a profit in order to obtain his *list price* or *selling price.*

His cost finding system is directly under his supervision. Time study observations, conducted at each machine or at each phase of the production of an article enable him to foretell his expectancy to a nicety. Moreover, and what is more important, he has the ability of directing and controlling production. He knows every day whether a machine unit is producing in accordance with the bogey which he has established for it. He can apply immediately any remedial measures necessary to correct a falling off of production in any department or at any machine. His cost-control is tied up with his cost-finding. It is *quantity production* which enables the manufacturer to investigate every phase of the manufacturing process and to install control systems with which processing is intimately associated.

Manufacturer's Methods Scientific

The electrical contractor may have a cost system, but not a cost-finding system. He does not concern himself with controlling his production. His desire of course is to make a profit from each contract, but he is in ignorance of the true condition of any wiring operation until the job is completed. His books show how much labor and how much material has been used in a job, but his books do not show how much labor was expended in placing any part of this material. He may have personally observed that a certain panel board was installed in a certain time, but his books do not reflect such information. He does not know *exactly* what it costs to install conduit, outlet boxes, hangers, wire, and other material necessary.

This contractor is not able to direct and control production. No standards of time have been set or established. He does not know and seems not to care whether a man should couple up two

Here is Way Louis D. Rubin Electrical Co. of Charleston, S. C., Arranged its Window to Attract Attention When Famous Play "Theodora" Came to Town

While more or less attention was attracted to National X-Ray's Booth at the Market by turn table and other means to set forth color lighting, it is safe to assume the display "Behind the Footlights" had its share of admirers

lengths or three lengths of one-half inch conduit per hour. His best cost-control system is his best judgment—his ability to sense a true fitness of things. That may be all right, but some contractors do not even possess good judgment.

All this may be true; but what seems to be far more important—or at least more fundamentally serious is the fact that he does not know what he wants, and therefore does not ask for a remedy.

Contractor's Methods Unscientific

There are extant certain electragists who do possess cost-finding systems and who practice cost-control. These men may remark that the above statement is *bromidiotic*. We take no issue with them. The indictment merely serves to illustrate the point that there seems to be a crying need for a sort of paternalistic coöperation from trade associations and firms engaged in manufacturing and jobbing electrical materials.

No significance is attached to the fact that the electrical contractor seems to be the "weak sister" of the industry. This impaired condition cannot always be attributed to lack of capital nor to the lack of knowledge of business economics. I believe the real answer to that question is the fact that contractors have become notorious procastinators and are slaves to a certain kind of *habit-of-mindness* from which they make no endeavor to extricate themselves.

To illustrate the point that paternalism sometimes (if not always) is a good thing, it may not be illtimed to cite the action that was taken against the German potash producers by the militaristic warlord who now resides in the shadows of the windmills of Holland. These G. P. P.'s were "big-sticked" into selling their product to the world at a profit to themselves and their master. They did so, quite reluctantly it is true, but this paternalism was exercised in their behalf and with the net result of a gain to their country and their monarch. What he did with the profits does not concern us at present, but his method may be well worthwhile imitating.

Is there some Force for Good—some Good Samaritan, who will undertake the chore of showing Contractor the right way. Contractor can learn from manufacturer, but some agency possessing both authority and prestige to a degree which will serve its purpose, must administer the medicine in large doses, and in some instances our recalcitrant brother may require three swift Kicks.

There is need for remedial measures. Propagandists insist that Contractor can work out his own salvation, but the mortality rate is on the increase in the meantime.

We believe that a knowledge of the costs of production is the most important implement possessed by the manufacturer. Without it, he is a guesser. The electrical estimator is merely a *Guestimator* unless he knows production costs.

Mr. Man, how do you account for the great differences in bids received by the average architect?

Why should Contractor A submit a bid which is approximately 60% of Contractor D, with B and C in between these two, and 20% apart? The great difference in bids can be attributed to the following factors in the order of their importance:

(a) Differences due to dissimilar opinions as to labor costs;
(b) Differences due to interpretation of plans and specifications;
(c) Differences due to material forgotten;
(d) Differences due to percentage of overhead and profit allowed;
(e) Differences due to purchasing ability (material costs);
(f) Differences due to allowance of incidental and miscellaneous direct job costs;
(g) Differences due to method of "marking up" prime cost.

If Contractor A knows very little about labor costs and has misinterpreted the specifications and has forgotten a considerable quantity of material, his bid would be such as to reflect all his short-comings, and hence B, C, and D would submit proposals somewhat higher.

Contractor B may have made an inadequate allowance for incidentals and may have marked up his prime cost or estimate sheet cost in error. That is to say, every job should take a different overhead expense markup. A $50 cost should be marked up at least 50%, but a $2,000 cost only 20% or 25%, probably not as much in these fretful times.

Good estimating methods should reduce all estimates to a parity. In the event that all bids are practically similar, the contractor having the best reputation for *service* would get the job; if all the competitors are equally well known, then he who is the best salesman will get the job.

Labor costs should be as concrete as the costs of material. When the purchase of conduit is under consideration, the contractor shops around and buys conduit at the best price and terms he can procure. He has in mind the unit cost per 100 feet of conduit; he should also have in mind some definite idea of the cost per 100 feet for installing this conduit.

It is an easy thing to remember that ½-inch conduit may cost about $4.50 per 100 feet. It should be just as simple to reflect on the labor cost of installation—not in money terms—but in terms of the quantity which can be installed per hour, or rather the number of hours per 100 feet.

We realize that it is a good, big, man-sized job to show Contractor what's what. The question is—who is going to wield the Big Stick?

If trade associations, manufacturers, and jobbers will not concern themselves with research which will strengthen this weakling in the Electrical Family—who will?

WANTED—Somebody who will.

ORGANIZATION ACTIVITIES

STATE CHAIRMEN AND SECRETARIES

State	Chairman	Secretary
ONTARIO, CANADA:	K. A. McIntyre, 24 Adelaide St., W. Toronto	J. A. McKay, 24 Adelaide St., W., Toronto
BRITISH COLUMBIA:	C. C. Carter, 739 Hastings St., Vancouver	P. F. Letts, 3044 Granville St., Vancouver
COLORADO:	J. Fischer, 213 15th St., Denver	W. A. J. Guscott, 1100 California St., Denver
CONNECTICUT:	Tryon Smith, 247 State St., New London	Geo. M. Chapman, 43 E. Main St., Waterbury
DISTRICT OF COL.:	Frank T. Shull, Conduit Rd. and Elliott St. Washington	H. R. Harper, 635 D St., N. W., Washington
FLORIDA:	T. E. Satchwell, Jacksonville	J. G. Spencer Palatka
GEORGIA:	Henry Morton 1227 Broad St., Columbus	C. B. Anderson Walker El. & Plain. Co., Columbus
INDIANA:	A. B. Harris, Gary	A. I. Clifford, 507 Odd Fellows Building, Indianapolis
IOWA:	Louis L. Corry, 510 Brady St., Davenport	
KANSAS:	C. S. Smallwood, 1017 N. 5th St., Kansas City	Arthur Tucker, 619 Jackson St., Topeka
LOUISIANA:	C. S. Barnes, 513 Gravier St., New Orleans	R. S. Stearnes, 336 Camp St., New Orleans
MARYLAND:	A. C. Brueckmann, Keyser Bldg., Baltimore	C. Philip Pitt, 7 St. Paul St., Baltimore
MASSACHUSETTS:	Chas. P. Whitall, 333 Bridge St., Springfield	J. E. Wilson, 263 Summer St., Boston
MICHIGAN:	Henry Roseberry, 41 Pearl St., Grand Rapids	H. J. Shaw, 613 Lincoln Bldg., Detroit
MINNESOTA:	John M. Roberts, 1589 Selby Ave., St. Paul	Arthur P. Peterson, 2395 University Av., St. Paul
MISSOURI:	Wm. F. Gerstner, St. Louis	A. J. Burns, 533 Delaware St., Kansas City
NEW JERSEY:	Geo. E. Davis, 23 Central Ave., Newark	Elmer D. Wilson, 23 Central Ave., Newark
NEW YORK:	F. A. Mott, 29 St. Paul St., Rochester	J. P. Ryan, 26 Cortlandt St., New York City
OHIO:	C. L. Wall, 212 S. Main St., Akron	Walter R. Keefer, 939 E. McMillan St., Cincinnati
PENNSYLVANIA:	R. W. Keck, Allentown	M. G. Sellers, 1518 Sansom St., Philadelphia
TENNESSEE:	P. W. Curtis Chattanooga	J. A. Fowler, 10 S. Second St., Memphis
WISCONSIN:	L. G. Ross, 1305 Tower Ave., Superior	H. M. Northrup, 25 Erie St., Milwaukee

LIST OF LOCAL ASSOCIATIONS AND MEETINGS

State and City	Local Secretary	Street Address	Time of Meet.	Place of Meet.
ALABAMA				
Birmingham	-------	-------	-------	-------
Mobile	Frank Sigler	Sigler Elec. Co.	Wed. 5 p. m.	Members' Offices
ARIZONA				
Phoenix	A. H. Rosenburg	-------	Tues. 4 p. m.	Bldrs. Exc.
CALIFORNIA				
Berkley	J. M. Gregory	Pacific Bldg.	Fri. 8 p. m.	Pacific Bldg.
Covina	F. Rambo	-------	1st & 3rd Mon.	Ontario
Long Beach	O. W. Newcomb	308 E. 4th St.	Tues. Ev'g.	Spaulding's
Los Angeles	Irvin C. Bruss	118 E. 3d St.	-------	-------
Oakland	J. Gregory	Pacific Bldg.	Tues. 8 p. m.	Pacific Bldg.
San Francisco	A. Elpins	165 Jessie St.	12 Noon, Thurs.	States' Cafe
Van Nuys	Los Angeles Asn	-------	Tues. 6:30 p. m.	Pin Ton Cafe
COLORADO				
Denver	L. B. Roberts	403 Mining Ex.	1st and 3rd Fri.	DG & EL Aud't.
Manitou	-------	-------	Friday Nights	Col. Springs
Pueblo	H. Ashcraft	-------	2nd Tues.	Commerce Club
CONNECTICUT				
Hartford	Mr. Cook	Hart & Hegeman	1st Wed.	Hartford
New Britain	F. Mulvehill	-------	-------	-------
Waterbury	D. Neth	Conn. Lt.& P.Co.	On Call	192 Grand St.
DIST. COL.				
Washington	---------	---------	2d Thurs.	Dewey Hotel
FLORIDA				
Jacksonville	W. L. Joseph	155 E. Forsyth	1st Tuesday	208 Realty Bldg.
Miami	C. E. Pullen	Pullen-Zoll Co.	---------	---------
GEORGIA				
Atlanta	Cheny Emerson	Irz & Baker Sts.	Thurs. 12:30	Dafodil Res.
ILLINOIS				
E. Moline	E. J. Burns	Rock Island	Once a month	Bldrs. Ex.
Chicago	J. W. Collins,	179 W. Wash. St	2nd & 4th Wed.	Lmbrmns Ex.
Decatur	E.O. Weatherford	114 E. Wm. St.	1st. Wed.	Y. M. C. A.
Springfield	C. A. Meadow	407 E. Ad'ms St.	-------	-------
E. St. Louis	C. F. Broderick	317 E. Bro'dw'y	Sat. 2 P.M.	Arcade Bldg.
La Salle	Ed. Blaine	-------	1st & 2nd Tues.	Post Hall
Rock Island	E. J. Burns	219 18th St.	1st & 3rd Mon.	219 18th St.
Streator	Wm. Schroder	613 Tyler St.	---------	---------
INDIANA				
Evansville	I. A. Welburn	404 Main St.	Ev. Fri.	Y. M. C. A.
Gary	A. B. Harris	570 Washington	-------	-------
Indianapolis	G. L. Skillman	29 S. Capitol	1st & 3rd Thurs.	Comm. Club
South Bend	Mr. Moran, Jr.	832 N. St. Louis	1st Tues.	B. & T. Ex. Bldg
Warsaw	F. E. Strauss	120 W. Market St	Wed. Ev'g.	-------
IOWA				
Davenport	Louis F. Cory	-------	Mon. 6 p. m.	Chamber Com.
Sioux City	F. H. Abbot	-------	Mon. 6 p. m.	Jackson Hotel
Waterloo	H. L. Hileman	600 Bluff St.	---------	-------
KANSAS				
Topeka	H. S. Lee	816 Kansas Ave.	Mon. Noon	Elk's Club
Wichita	L. A. Harris	446 N. Main	Ev. Tues. 7.30	United Elec. Co.
KENTUCKY				
Louisville	Walter Diecks	528 W. Jefferson	2-4 Thurs.	B. of T. Bldg.
Paducah	W. R. Kitterjohn	---------	Last Thurs.	---------
LOUISIANA				
New Orleans	R. S. Stearnes	336 Camp St.	1st Weds.	Teocalli Hall,
Shreveport	Percy Elliott	Elliott El. Co.	Ev'y Monday	---------
MAINE				
Portland	N. S. Boothing	222 Middle St.	On call	---------
MARYLAND				
Baltimore	C. P. Pitt	7 St. Paul St.	3d Tues.	Eng'rs. Club
MASSACHUSETTS				
Boston	J. E. Wilson	263 Summer St.	3d Thurs.	Boston City Club
Fitchburg	R. M. Gowell	-------	1st Mon.	Fay Club
Haverhill	H. W. Porter	24 West St.	2d Mon.	El. Lt. Sta.
West Medford	H. J. Walton	Malden El. Co.	Monthly	Various
Worcester	L. H. Treadwell	681 Main St.	2d Thurs.	44 Front St.
MICHIGAN				
Battle Creek	-------	-------	Ev'y oth'r Tues.	Post Tavern
Detroit	H. Shaw	613 Lincoln Bldg	Last Thurs.	G. A. R. Hall
Flint	J. Markle	718 S. Saginaw	-------	-------
Grand Rapids	Henry Romyn	40 Ionia Av.N.W	Tues. Noon	Ass'n of Com.
Kalamazoo	M. Randall	Exch. Place	-------	Cham. Com.
MINNESOTA				
Duluth	Alfred L. Foster	210 W. 1st St.	1st Tuesday	-------
Minneapolis	A. P. Peterson	2395 University	2d & 4th Tues.	Builders' Exch.
St. Paul	A. P. Peterson	Ave., St. Paul	2d & 4th Mon.	Elk's Club
MISSOURI			6:30 P. M.	
Kansas City	R. L. Hutton	210 Admir'l Blvd	1st & 3rd Tues.	University Club
St. Louis	Wm. Burton	1516 Pine St.	Mon. 12:30	Am. Hotel
NEBRASKA				
Lincoln	G. G. Kingham	142 S. 12th St.	1st & 3d Mon.	C. of C. Bldg.
Omaha	J. B. Coningham	---------	1st & 2nd Mon.	Various
NEW HAMPSHIRE				
Portsmouth	F. C. Hatch	Kittery	2d & 4th Wed.	-------

State and City	Local Secretary	Street Address	Time of Meet.	Place of Meet.
NEW JERSEY				
Atlantic City	F. P. Wright	16 Ohio Ave.	1st Thursday	Malatesta Hotel
Jersey City	Wm. Doellner	743 Bergen Ave.	-------	P. S. Bldg.
Long Branch	Chas. Maggs	462 Bath Ave.	1st & 3rd Mon.	Comm. Hotel
Newark	Geo. E. Davis	23 Central Ave.	1st Monday	23 Central Ave.
Paterson	H. M. Dessix	88 Ellison St.	Last Friday	P. S. Bldg.
NEW YORK				
Albany	Chas. Russell	31 Hudson Ave.	3d Thursday	Pekin Rest'at
Binghamton	A. H. Hyle	-------	-------	-------
Brooklyn	H. W. Walcott	12 Nevins St.	1st Mon.	Cham. Com.
Buffalo	E. P. McCormick	555 Wash. St.	Fridays	507 Elec. Bldg.
Cooperstown	B. B. St. John	Oneonta	3d Tues.	Vanon
Endicott	A. H. Hyle	Binghamton	Tues.	Cham. Com.
Jamestown	Henry Lund	309 Main St.	3d Mon.	Mfgrs. Ass'n.
Kingston	M. C. Rivenberg	-------	-------	-------
Nassau-Suffolk	J. A. Palmer	Huntington	-------	-------
New Brighton	E. L. Taylor	Tottenville	-------	-------
N. Y. Sec. No. 1	J. P. Ryan	26 Cortlandt St.	1st Thurs.	Penn'a Hotel
Independent	John Perass	22 New Chambers	2nd & 4th Wed.	226 W. 58th St.
Sec. No. 3	L. F. Lwedecke	-------	-------	-------
Olean	H. C. Thuerk	Olean L.&P. Co.	Monthly	Various Stores
Oneonta	B. B. St. John	-------	3d Thursday	-------
Rochester	H. F. Janeck	33 St. John St.	1st. & 4th Mon.	Eggleston Hotel
Saratoga Springs	W. F. Camp	S. Glen Falls	2d & 4th Thurs.	'ara'ga & G. Fa's
Schenectady	Mr. Spengler	McClellan St.	Subject to call	-------
Syracuse	H. N. Smith	P. O. Box 809	1st & 3d Monday	-------
Tottenville	W. Taylor	Tottenville, S. I.	1st & 3d Thurs.	St. George, S. I.
Troy	H. W. Boudey	First St.	1st Tues.	Gas Office
Utica	Mr. Hall	Gray Elec. Co.	1st. Tues.	Elks' Club
Westchester	I. W. Austin	White Plains	-------	-------
Watertown	L. B. Smith	Roth Block	3d Fridays	Utilities Bldg.
Woodmere	Geo. La Salle	Westbury	-------	-------
Yonkers	Mr. Mayer	Manor House Sq	Monthly	-------
OHIO				
Akron	L. C. Wall	2d Nat. Bk. Bl'g	Monthly	2d Nat. Bk. Bl'g
Bellaire	J. Blumenberg	Bellaire	Call of Sec'y	Bellaire
Cincinnati	W. R. Keefer	939 E. McMillan	Tues. 3 P. M.	Cham. of Com.
Cleveland	Geo. D. Biery	E. 95th St.	1st & 3d Thurs.	Builders' Exch.
Columbus	O. A. Robins	Ernest Hopkins	2d Wed.	Builders' Exch.
Dayton	O. J. Osmond	41 Fountain Av.	1st & 3d Mon.	Bldrs. Exchange
Springfield	J. R. Yost	-------	On call	Various
Steubenville	D. C. Hartford	-------	1st Wed.	Nat. Ex. Bank
Toledo	F. J. Lucas	-------	On Call	M'fts. & Mfrs. As.
Youngstown	F. F. McBride	Builders Exch.	Mon. Noon	Y. M. C. A.
OREGON				
Portland	F. R. Whittlesey	212 Henry Bldg.	2d & 4th Monday	Cham. of Com.
PENNSYLVANIA				
Allentown	A. Hill	Bethlehem	Monthly	-------
Bethlehem	A. H. Hill	510 W. Main St.	-------	-------
Catasauqua	W. T. Kleppinger	-------	Last Thursday	-------
Dubois	C. E. Blakeslee	-------	Monthly	-------
Easton	G. E. Hill	Bethlehem	Monthly	-------
Erie	Earl Stokes	Bldrs. Exch.	-------	Bldrs. Exch.
Lancaster	A. Deen	-------	3rd Friday	Und'w't'rs Offce
Philadelphia	M. G. Sellers	1518 Sansom St.	2nd Thurs.	Builders' Exch.
Pittsburgh	Joe Jaques	McCance Bldg.	1st. Friday	Various
Scranton	A. J. Fowler	Bd. of T. Bldg.	Tues.	Zenke's
St. Marys	C. E. Blakeslee	Dubois	Mon.	-------
York	A. E. Harris	E. King St.	2d & 4th Tues.	-------
SOUTH CAROLINA				
Columbia	E. L. Cashion	Sumter, S. C.	-------	-------
Greenville	E. C. DeBruhl	Ideal Elec.	-------	-------
TENNESSEE				
Chattanooga	Carl Schnider	412 Kirby Av.	Wednesday	Manhattan Cafe
Knoxville	H. M. Moses	615 Market St.	Noons.	Rwy. Lt. Co.
Memphis	H. A. Street	285 Madison Av.	Monthly	Allyn Cafe
Nashville	J. B. Mullen	Arcade	Ev. other Wed.	Tularie Hotel
TEXAS			1st & 3d Wed.	
Dallas	H. A. Brewster	409 S. Eway	On call	409 S. Eway
UTAH				
Salt Lake City	Gus. Foresburg	6924 So.	Wed. 12:15 p.m.	Newhouse Hotel
VIRGINIA				
Lynchburg	W. M. Ellic.t	Lynchburg	1st. Wed.	Local Stores
Norfolk	K. D. Briggs	Arcade Bdg.	Wednesdays	Old Col. Clb.
Richmond	W. A. Cutlett	Jeff. & Grace Sts	-------	-------
WASHINGTON				
Seattle	J. R. Barry	Pantorges Bldg.	Thursdays	Elks Club
WISCONSIN				
Green Bay	John B. Tingley	---------	1st Thurs.	Maryland Hotel
Milwaukee	Henry C. Hutton	719 Majestic Bld.	2nd Tuesday	Maryland Hotel
Racine	F. H. Patrick	1545 W. Blvd.	1st. Tues.	Racine Bldg.
CANADA				
Kitchener	O. S. Leyes	93 Louisa St.	Mon. 8:00 p.m.	Elec. Insp. Office
Toronto	J. A. McKay	24 Adelaide St.	2d Tues.	Bd. of Trade
Vancouver	P. F. Letts	3044 Granville St	Ev'y Tuesday	724 Pacific Bldg.

National Executive Committee Meeting

Many Important Subjects Taken up at Interesting Two Day Session Held at Association Headquarters March 13 and 14

An unusually interesting two day meeting of the National Executive Committee was held at National Headquarters in New York City on March 13 and 14. Each session was taken up with concerted discussion, and it was the unanimous opinion of all who attended that this meeting of the Executive Committee, in the matter of expeditious handling of the important subjects in hand, overshadowed any previously held.

National Chairman James R. Strong called the meeting to order for the opening session promptly at ten o'clock on Monday morning, the 13th. Sixteen committeemen were present, Mr. Gramm of Washington, D. C., being absent due to illness, and Mr. Williams of Vancouver, being unable to attend. Neither Colonel Stearnes of New Orleans nor T. M. Templeton of Detroit could attend and Ernest McCleary of Detroit and M. H. Johnson of Utica respectively were asked to substitute for the two last named.

The report of the treasurer, while showing a loss for the year, was considered favorable in view of the effects of the general financial condition which has been so severe in every branch of industry in the past year or more. In the matter of membership a very encouraging report was read by the secretary, and considering the business depression an increase was noted. There was not the falling off as was predicted last summer.

In commenting on the report of the secretary-treasurer, Mr. Strong said that a large amount of money had been expended this year for the work of committees that had not been functioning the year previous. The national chairman felt very optimistic for the future and said he believed the bottom had been reached and that soon a substantial increase in revenue would be realized.

At this time Chairman Strong announced that a brief period would be given over to an informal introduction of committeemen and visitors who were unacquainted. Among others were introduced the newly elected committeemen R. A. L. Gray of Toronto and E. H. Eardley of Salt Lake City, who represented these divisions for the first time. The chairman also announced that both noonday luncheons would be held at the Engineers Club, and that all attendants were invited to attend a theatre party on Monday night to see the well known performance "Sally."

Report of Special Representative

Special Representative Davis presented a brief report of his activities, giving an account of his recent trip through the south and west. He said the various electrical interests are gradually getting together throughout the country, and that with proper local and national coöperation the industry will rapidly advance.

Mr. Davis said much present disparity is due to the many socalled associations receiving dues from members which do not function. It is his belief—which was firmly backed up by the experience of K. A. McIntyre whose travels for the Society for Electrical Development takes him to all parts of the country—that the problem is one of education brought about by a desire on the part of electragists to know more about the successful running of their businesses. Undoubtedly this desire for instruction could be met by the distribution from National Headquarters of textbooks on wiring, lighting, estimating, accounting, and other subjects.

A. J. Hixon emphasized the significance of the desire on the part of central stations to coöperate with contractor-dealers and help build their businesses up to the highest point of efficiency. This coöperation, he explained, is being carried on through a joint business development committee of the National Electric Light Association organized at this year's annual meeting, which will function through sub committees, each representing a branch of the industry.

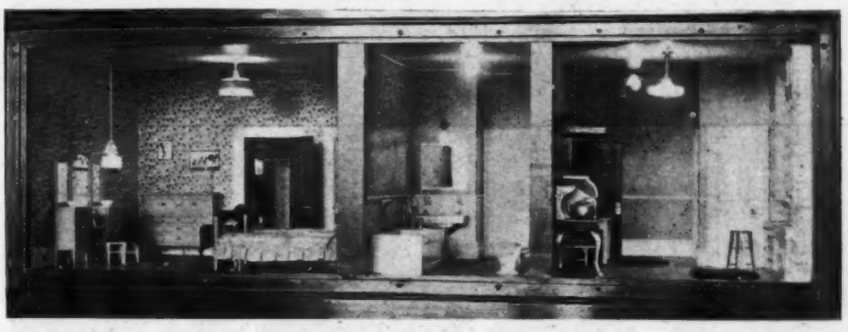
M. H. Aylesworth, executive manager, explained further the more and better business movement of the N. E. L. A. and said that it is built on principles of selling. He said the fourth function of selling—that of making the individual sale—can never be covered by coöperative development work, but only by the efforts of the individual retailer, who must tie in with the work of the general movement.

After hearing Mr. Aylesworth's remarks, it was felt that all possible support should be given the N. E. L. A., and that an exhibit should be maintained at its annual convention to be held in Atlantic City next month, where someone from National Headquarters would be in constant touch with the valuable activities of this meeting.

Important Work of Code Committee

A. Penn Denton's report for the Code Committee brought out the fact that the adoption of the revised code would be put off until March, 1923, and that undoubtedly the principal subject of revision was the 660 watt rule. Recommendation was made for an increased wattage of the branch circuit if investigations show that contractor-dealers are best served by thus doing.

An extensive discussion developed concerning the fact that a vast amount of inferior electrical goods is being placed on the market at the present time. As an illustration of the existence of this deplorable condition, a case was cited of the results of recent tests made by Thomas Henry Day of the Western New



This is a view of the miniature home electrical built by Berthold Audsley of the Edison Lamp Works, displayed at the Fixture Market. It took a year's time for Mr. Audsley to complete this work of art. The model is made of cardboard and lighting fixtures were especially cast of glass and contained 6-volt grain-of-wheat lamps. Every room is fully equipped with convenience outlets

England section of Electrical Inspectors, whereupon the following resolution was passed:

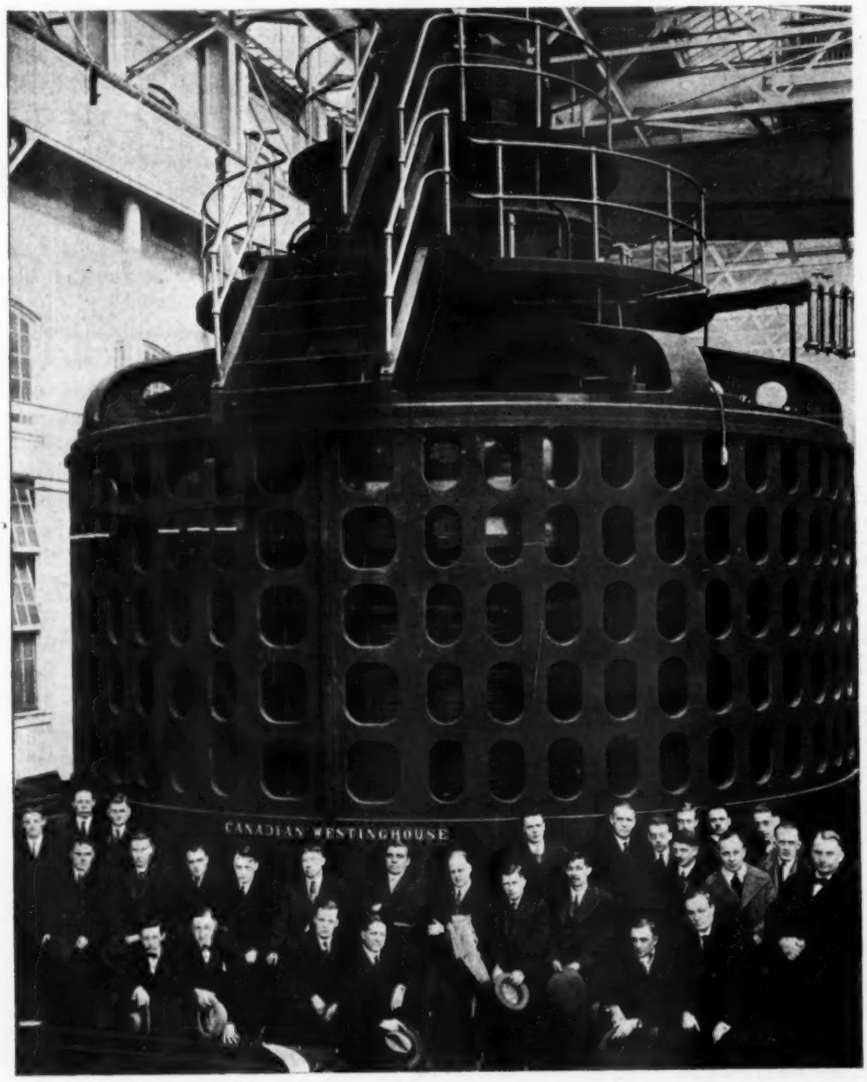
Whereas, It has been brought to the attention of our Executive Committee that certain persons and interests within our electrical industry have encouraged the use of electrical goods of inferior quality; and

Whereas, It has always been the policy of the members of our Association to use and recommend the use of only those electrical devices and materials which in every way conform to the rules of the National Electrical Code; therefore

Be it resolved, That we deplore any action which may lower the standard of electrical goods and hereby record the position of the National Association of Electrical Contractors and Dealers as approving the use by our members of only those electrical devices and materials which in every way conform to the requirements of the Underwriters' laboratories whose standard of quality and workmanship is the National Electrical Code.

After thoroughly discussing Arthur L. Abbot's report on Cost Data, it was decided to adopt a manual of estimating. This manual will be in loose leaf form to facilitate occasional revision, and will cover labor data applying to the more common operations on the typical job; a discussion of this data and instructions for its use in estimating and general instructions on methods of taking off quantities of material, use of forms, etc.

The report of the Wiring Committee, J. F. Buchanan, chairman, showed that the use of standardized plugs and receptacles is being widely adopted throughout the country. It was recommended that the system of 3-wire cord be not adopted, since a large proportion of devices in use at present have no provision for the additional wire, and the polarization of present plugs and receptacles would not enter unless a 3-wire cord and a new 3-prong plug and 3-hole receptacle were introduced.



Hamilton Branch Members of Ontario Association Recently Paid a Visit to Canadian Westinghouse Works at Hamilton to Inspect this Generator—One of the Largest in the World—Which Has Been Built for Chippawa-Queenston Development on Niagara River

There was considerable discussion concerning the merits of the Universal Data and Sales Book in its present form. As sales sheets are printed when the manufacturer furnishes data for a revision—even through the policy of issuing resale price sheets as such as been abandoned—about ninety percent of the sales sheets still contain references to selling prices. To revise these sheets would involve considerable expense. It was felt therefore that if the present Universal Data and Sales Book were made only a Data Book, the issuing of any kind of sales sheets that might tend to create any thought of suspicion by the U. S. Department of Justice would be eliminated, and the book would be more convenient to use. To this end it was voted to discontinue the publishing of all yellow and pink sheets, and the disposition of these sheets as they are now embodied in the book would be determined by the committee in charge. The book will eventually be called "The Electragist's Data Book."

Proposed Amendments to Constitution

Under the proposed amendments to the constitution and bylaws of the National Association it was decided that the title shall be changed to the "International Association of Electragists." This is not a radical amendment in view of the action taken at Buffalo, last July, to adopt this new word, and since which time the new term has met with such general approval. Some have said that the change of name might make the Association appear a highbrow institution, but it is argued that it will not be meant to be more highbrow after the renaming than it would be erroneously considered lowbrow before. The fact was pointed out that "electragist" is not a more unusual word than "refrigerator," "geography," "engineer," or other words now common to the American language which perhaps seemed to be high sounding when they first appeared.

The territory of the Association will be redivisioned. There are but four territorial divisions now, and under the proposed amendment there will be eight. It is believed the voting power of members will be more evenly distributed under this arrangement and the value of National effort will be enhanced. Also it will reduce the present number of committeemen from the unwieldy nineteen to only eleven in all.

Provision has been made in the constitution for the optional forming of two separate sections for open and closed

shop members that might wish to join either. There was very earnest objection to bringing the labor unions into the National. The framers of the present proposed amendment feel that they have struck the keynote in the elimination of labor questions on the floor of conventions by following the lead of the United Typothetae. That organization has designated and is now successfully operating two separate and distinct sections in which both sides of the labor question can be discussed and such measures taken as will prove satisfactory to each body. Along these lines new article eight is proposed in part as follows:

Section 1. Such members as so desire may form a section of this Association for the purpose of making contracts or agreements, or conferring with labor unions, but the business of such section shall be confined to labor matters. This shall be known as the Union Shop Section.

Section 2. Such members as so desire may form a section of this Association to operate open or non-union shops The business of such section shall be confined to labor matters. This shall be known as the Open Shop Section.

Section 3. Each section shall elect its own chairman who shall automatically become a member of the International Executive Committee.

Section 4. In the conduct of labor matters the Open Shop and Union Shop Sections shall enjoy complete autonomy, except as hereinafter provided.

Section 5. Both the Open Shop and Union Shop Sections shall appoint from their membership three members, of whom the chairman of the section shall be one, these six to form the labor committee of this Association. The creation of this committee will enable the Open Shop and Union Shop Sections to coöperate if they so desire in labor matters of mutual interest.

Section 6. Each of the sections shall have full control of its own funds and may levy upon its members such additional dues or assessments as it may deem necessary; but no International Association funds shall be used to promote the work of either section. Neither section shall make any rules or contracts in conflict with the International Association's constitution and by-laws or contrary to state or federal laws.

Section 7. Neither the Union Shop Section nor the Open Shop Section may admit to membership any person, firm, or corporation not a member of the International Association.

It is proposed to strike out article five. This article dealt with State Associations. By omitting it, it is not intended to break down state or provincial associations where they wish to continue, nor in any way to discourage district or local associations; but to make each and every organization independent of the other, so that a member may join one or more of them at his own option. Then the International Association, the State Association, and the District Association will each carry on its own work according to its capacity as it sees fit, with no strings tied to it. This should tend to benefit each of them.

At the last session of the Executive Committee on Tuesday afternoon, the nominating committee composed of G. M. Sanborn, chairman; J. E. Sweeney, and J. F. Buchanan, announced that it had prevailed upon Mr. Strong to accept once more the office of national chairman—or international president as he will be called under the proposed change in the constitution. Mr. Strong said that while he was reluctant to accept the position again, he appreciated the honor of being reelected and thanked the committee. Other new members elected were as follows:

Committeemen at Large, L. G. Ross of Superior, Wisconsin, and L. H. Lamont of Chicago, were elected to the executive committee on account of resignations. Mr. Ross takes the place of T. M. Templeton as chairman of the Standardization Committee, and Mr. Lamont succeeds B. H. Bendheim as chairman of the Merchandising and Industrial Development Committee, the latter having made plans to remove to California. H. P. Foley of Washington, D. C., was elected as chairman of the Legislation Committee to fill the vacancy caused by the resignation of E. C. Gramm. Other National Committee Chairmen were re-elected, and their names will be found on the Executive Committee page in the first advertising section of this issue.

Good Times Movement

N. E. L. A. Begins Nation Wide Effort to Show True Value of Electric Service

After carefully surveying the field the National Electric Light Association has decided that the present time offers unusual opportunities to prove to the public the true value of electric service. Accordingly a movement has been started to carry out a nation wide program of activity. This movement is backed by each branch of the industry and is carried on under the auspices of the Joint Committee for Business Development.

This joint committee was appointed as the result of a meeting of some fifty executives representing the various fields of electric service. It was felt that the most successful work could not be done without the united effort of all interests, such support being given by each branch of the industry in proportion to its relation to the ultimate service rendered. The joint committee will function through the following subcommittees in the capacity as indicated:

Lighting Committee: This committee has in preparation a prospectus which will describe in detail more than twenty lighting activities for the consideration of the local organizations. It will give definite suggestions based upon the actual experiences of the many cities such as Cleveland, Milwaukee, Los Angeles and Denver in connection with each of the many activities suggested. It is

This picture is proof that Robley S. Stearnes' motto "Not what you can build, but how well you can build" was well carried out in the establishment ten years ago of his own business at New Orleans under the name of the Standard Electric Construction Co. The colonel's slogan is "Everything Electrical." He is shown in the rear, with his stenographer at his left. The fine looking chap at the right is Vincent Gray, secretary of the company

UMI

quite probable that not all of these suggestions will apply in any one community, but all of them will be timely, and the local organization may use the prospectus to good advantage in perfecting its plans for a local drive.

Appliance Committee: This committee will make available a pamphlet outlining its general plans for appliance business developments, together with suggestions for local procedure in promotion and direct sales effort.

Industrial Power Committee: The activities of this committee will be divided into several parts, which will include the greater development of industrial power, a better understanding of electric vehicle service, industrial heating, etc.

Wiring Committee: This committee will be equipped to give the latest suggestions on wiring information to the building industries and to the local organizations. It will be constantly working with the wiring committee of the National Electric Light Association and with all other committees on better wiring in the industry.

While the direction of this broad movement will be under the direct control of these subcommittees of the Joint Committee for Business Development, the program evolved will be administered by a headquarters staff organization to be located in the offices of the National Electric Light Association at 29 West 39th Street, New York City. This headquarters staff will include a director who will devote all of his time to this work, and an adequate staff for complete coöperation with local organizations and with other national organizations as well as individuals in the electrical industry.

The committee has no thought of outlining some one program of activities that might be operated in any locality, and forcing it upon a community to be financed and put into effect. On the contrary, it is their thought to be quite definitely helpful to each community in perfecting an organization to function locally and then to assist in the preparation of a program that will best meet existing conditions to the end that the maximum good may be accomplished.

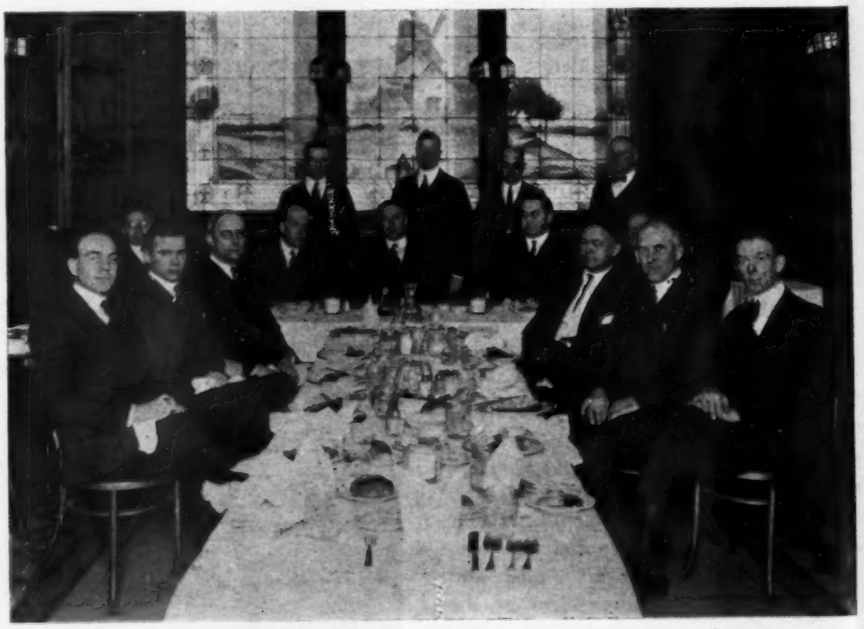
A questionnaire is being sent to every central station member of the National Electric Light Association for the purpose of determining in detail what has already been done in each community, what activities can most profitably be started in each at the present time, and what local organizations if any can either be utilized or most easily perfected to successfully undertake this work. Members of the National Association of Electrical Contractors and Dealers will be informed by National Headquarters of the progress of the movement.

Although in the final analysis the ultimate success of this movement will be a dollars and cents proposition, it is well to remember that there are four fundamentals in selling, only three of which can to a material extent be furthered or immediately accomplished by any movement with such a broad, general scope. These are as follows:

1. Commanding the attention of the buying public.
2. Creating an interest in electrical products through education.
3. Creating a desire to have electrical products.

All of these three functions will be accomplished by the work as outlined by the Joint Committee for Business Development. The fourth function of selling—that of making the individual sale—can never be covered by coöperative development work, but only by the efforts of the individual retailer, who must tie in with the work of the general movement to the extent that he can say: "Here is the article you desire, of the highest quality, etc."

The more and better business movement is being built around the four fundamentals mentioned above. The first three will be covered in great detail and the last one can be measured only by the effort of the individuals in each community who are willing to coöperate in actually "selling" over a relatively longer period of time.



Luncheon Meeting of Denver Coöperative League Advisory Committee When Chairman T. O. Kennedy Announced His Departure for Cleveland to Take up Work With Ohio Public Service Co. Sitting, Left to Right: N. R. Crooks; E. C. Headrick, New Chairman; F. F. McCammon, Vice President; H. W. Dye, H. D. Randall, T. O. Kennedy, Alex Hibbard, O. S. More, J. J. Cooper, Secretary-Treasurer; R. W. Elliott, J. W. Ryall. Standing, Left to Right: George Lewis, J. P. Sprunt, Jr., S. W. Bishop, Executive Manager, and J. C. Davidson

Fees for Inspections

Editor, *National Electragist*:

I see in your March issue an editorial with which I wish to take exceptions. You speak of the passage of a New York City ordinance which effects contractor-dealers. I think you make a misstatement when you say that our industry is of one mind in endorsing these proposed changes but is badly split on the subject of charging fees for inspections.

Out of a large number of contractors that I have talked to about this I have known very few if any that are in favor of charging fees.

How many contractors does it take to make a "split" on such a question? (Signed) *Subscriber.*

If our complainant will turn to page 33 in the March issue of this magazine and again read the editorial in question he will find that beginning the sentence in line 5 of paragraph 2 it is distinctly stated that "The industry is of one mind in endorsing these proposed changes,

but is badly split on the subject of charging fees for inspections." Please note the word "industry." This includes manufacturers and central stations, as well as inspectors and several other well defined branches of the electrical *industry*, aside from the electrical contractor. If Subscriber will again read this sentence he will see that the electrical contractor is not necessarily included in the "split." Perhaps we should have said that the real split is between the latter and the New York City administration. —*The Editor.*

Call for Public Hearing On 660 Watt Rule

Public notice is hereby given that a hearing open to all parties interested will be held in the assembly rooms of the Chicago Board of Fire Underwriters of Chicago, twenty-first floor of the Insurance Exchange Building, 175 West Jackson Boulevard, Chicago, beginning at 10 a. m. Tuesday, April 18, by the members of the standing committees on devices and material and on wiring systems and standards of the electrical committee of the National Fire Protection Association to afford opportunity to all interested to express their views regarding a proposal which has been made to change related rules of the 1920 edition of the National Electrical Code covering limitations upon maximum load of branch circuits.

The meeting will be in charge of A. Penn Denton, 17th and Oak Streets, Kansas City, Mo., and A. R. Small, 207 East Ohio Street, Chicago.

It is the present plan to arrange for a second public hearing in New York City on May 19 at ten o'clock in the morning in the assembly rooms of the New York Board of Fire Underwriters at 123 William Street, New York.

Connecticut State Meets

The annual meeting of the Connecticut State Association was held at the Cafe Mellowe, New Haven, Connecticut, on Wednesday, March 1. Officers elected for the new year are as follows: Chairman, Tryon Smith, New London; secretary, George M. Chapman, Waterbury; treasurer, John A. Gilliland, Waterbury; and executive committeemen, N. B. Fitch, New Haven; L. S. Griffing, Hartford, and J. Warren Gay, New London. These men were also chosen to represent the electrical industry on the board of directors of the Connecticut Builders Exchange.

Reports of the secretary and treasurer showed that the membership and finances were in good shape, much better than might have been expected under the existing business conditions.

After considerable discussion the association decided to change its name to the Connecticut Association of Electragists, subject of course to the approval of the National Association. This action puts Connecticut at the head in being the first to adopt the new title.

Secretary Johnson read a paper on "How Trade Associations Help All Industries," in which he showed what can be done by association coöperative effort, and pointed the way to achievement. K. A. McIntyre represented the Society for Electrical Development, and he spoke on the work of the society and what it has accomplished. His address was unusually practical and instructive. Brief remarks were made by J. L. Deaur of the American Wiremold Company and Arthur H. Abbott of Boston.

Floodlighting Emmanuel Church of Baltimore was job that required much thought on part of lighting experts. It was found that best effects could be secured by placing total of ninety-six X-Ray Reflectors on roofs of adjacent buildings and using 250-watt floodlighting projectors

Davis in British Columbia

British Columbia welcomed Laurence W. Davis, special representative of the National Association of Electrical Contractors and Dealers, on March 1st, in Vancouver. The local executives had planned a three day program including a visit to Victoria, Vancouver Island, but owing to Mr. Davis having recently undergone an operation in Los Angeles, the Victoria trip had to be abandoned, much to the regret of the Vancouver Island members.

On his arrival Mr. Davis was met by C. H. E. Williams, national executive committeeman for western Canada. The visitor was then entertained at lunch by the Vancouver executive and the troubles of local electragists were discussed. A special meeting of members of the Vancouver Association of Electragists was held at night and for three and one-half hours local conditions were discussed much to the advantage of the members present.

Next day, March 2nd, the special representative's time was occupied by members who were anxious to interview him with matters affecting their individual businesses. In the Vancouver Hotel, a dinner was held under the joint auspices of the Vancouver Association of Electragists and the Electric Service League of British Columbia, at which one hundred electrical men took part. M. K. Pike, general sales manager of the Northern Electric Co., from Montreal, spoke on conditions in eastern Canada and also regarding the electric home held recently in Toronto but admitted when it came to coöperation, they had to hand it to British Columbia.

Mr. Davis, who was accorded a hearty welcome, then addressed the meeting and for two hours held the attention of all present with his talk on overhead and profit, illustrating as he went along by means of the blackboard. All agreed that the facts disclosed by Mr. Davis will still further cement the coöperative spirit in British Columbia and make the local electragists conduct their businesses along real business lines.

UMI

Inclosed Motors

Those who are interested in the National Electrical Code—and all electragists should be—are advised to read the comments of Hubert S. Wynkoop on another page of this issue concerning inclosed motors.

If "neither Code requirements nor current practice are as clearly defined as they might be," it behooves members of the National Association to put a bee in the bonnet of their representative, A. Penn Denton, to the end that the situation may be clarified.

It is more than likely that Mr. Denton can obtain some Code amendment which will remove whatever avoidable waste lies in the uncertainty of the present motor requirements.

Southern California Gives National Hearty Support

After attending the joint convention of electrical interests in New Orleans in the latter part of January, Special Representative Davis made his way over to the Pacific Coast, spending approximately two weeks in the various cities arranging meetings and getting the different groups to work together more effectively.

He addressed a meeting of supply jobbers at Del Monte and was received with a great deal of enthusiasm. He held very successful meetings of electragists in and around Los Angeles, getting many new members and reinstating a number of old members. At a regular meeting of the executive committee of the Southern District, California State Association, held in Los Angeles on February 13, the following resolution was adopted:

"That it be the sense of the Executive Committee that the work of the National Association of Electrical Contractors and Dealers as represented by Capt. Laurence W. Davis has our hearty support and coöperation and that we express to the National Association our thanks for its efforts in our district; further that our secretary be instructed and directed to coöperate and further the work of the National Association, to give any information he may have regarding its activities, to accept and transmit applications for membership therein from any contractor-dealer in our district, and to do any and all things necessary to further a greater assistance of mutual understanding and coöperation between the two associations. That the National Association of Electrical Contractors and Dealers be advised of this action."

In forwarding a copy of this resolution to National Headquarters, Robinson Farmer, the secretary, said he was glad such a resolution had been passed and he desired to express every good wish for the success of the National Association.

Electragist Tours Europe

Eli Goldenberg, a well known electragist of Baltimore, recently returned to his home town after having spent more than two months touring Europe. Seven countries in all were visited.

This electragist sailed on the White Star liner Olympic on December 30.

Eli Goldenberg

Arriving in Southhampton, he proceeded to London where he met Mr. Pierce the genial resident director of the Western Electric Company. He says London's condition had not improved since a year ago when he was there except that prices had gone down considerably, with no buyers. England is keenly suffering from German competition.

Crossing the English Channel, Mr. Goldenberg found the beautiful cities of Antwerp and Brussels in a thriving condition, and the people ever willing to take advantage of the American dollar. Going on into Germany he found Berlin flourishing, everybody eating, drinking, and spending money freely. The banks throughout Berlin are increasing their space. There are indeed no signs here of hard times.

Some time was spent in Austria which seems to be the poorest spot in all Europe. From Egyer, Hungary, enroute to Zurich, Switzerland, Mr. Goldenberg writes he spent thirty six hours in a cold sleeping car. He found Zurich the most expensive place of all the places he visited, prices here being higher than in the States.

Mr. Goldenberg reached Genoa at the time of the Pope's death, and he says it was a strange sight to see the crowds gathered throughout the city kneeling in prayer for the deceased pontiff. From Genoa he went to Nice, France—the last country visited. Nice, with its wonderful climate and surroundings, is a garden spot of Europe.

On February 3 Mr. Goldenberg boarded the White Star liner Adriatic for New York and arrived after an excellent trip of eleven days.

Mr. Goldenberg, upon his return home, says he is ever thankful he is an American. He says misery and hunger is scattered almost universally throughout many of the places he visited, and it is a question what will happen to Europe within the next few years, whether she will go still lower or will uplift herself.

N. E. L. A. Convention in May

From all indications it is believed that the forty-fifth annual convention of the National Electric Light Association to be held at Atlantic City from May 15 to May 19 will be the largest attended and the most important yet held. The facilities and accommodations of the city and the million dollar pier where the convention will take place are in every way adequate to the occasion, and equal to all the exacting requirements of a large attendance.

President Milan R. Bump announces that one of the features of the convention this year will be the evidencing of the results of the nation-wide drive for business development, as instituted at the beginning of the year by the Association in coöperation with all the branches of the electrical industry. In addition to the valuable reports of the Association's committees to be considered at the business sessions, subjects of the first order will be presented by speakers nationally and internationally known.

Local Association Formed

It is hoped that local contracting conditions will improve in Long Branch, New Jersey, since the organization there recently of a local association. This association meets the first and third Mondays of each month at eight o'clock in the evening at the Commercial Hotel.

The officers elected are: W. S. Edwards, president; Chas. Maggs, secretary, 462 Bath Avenue; Oliver Herbert, treasurer.

Twin City Exhibition Should Be Big Success

Final arranegments for the Twin City Electrical Exhibition evidence the belief that the first electrical show of its kind to be held in Canada will be a shining success. The show will be held in the auditorium at Kitchener, Ontario, during the week of May 1 to May 6 under the auspices of the Electrical Contractors and Dealer's Association of Ontario. It has had the endorsement of the Ontario Hydro Electric Power Commission, and the light commissions of Kitchener and Waterloo.

The purpose of this exhibition is to place the hydro power of the great Niagara behind every known electrical appliance and device, and to educate Canadians in the introduction and use of such in their homes and businesses. Kitchener is deemed the most appropriate place for holding the show in view of the fact that it is the birthplace of the hydro power idea, and it was from here that the Niagara hydro power was first turned on.

Exhibition space has been liberally contracted for by manufacturers of Canada and the United States as well. No effort has been spared to give the show the widest publicity possible. An entire page devoted to electrical developments has been run periodically in a leading newspaper, conducted by Kitchener and Waterloo electragists.

Trade Circulars

A series of circulars has been issued by the Lehigh Electric Company of Allentown, Pa., setting forth the merits of its line of appliances. "A Cooling Fairy is waiting here for you—call it to your home now and enjoy its coolness all summer," is the way fans were advertised. Other extracts from the convincing sales talks are: "An electric percolator, a waffle iron, a grill, and a toaster will keep you out of the kitchen on sultry days"; "the modern electric washer will put an end to all day Monday drudgery"; "We have all kinds of electric comforts and labor savers as well as lovely lamps and novelties, such as baskets, incense burners, and other oddities to add a touch of distinction to your home or porch this summer."

A Prominent Electragist

For the first time in the history of the various coöperative leagues and campaigns functioning throughout the country, it is believed, an electragist has been selected as chairman of one. E. C. Headrick, undoubtedly the most prominent contractor-dealer in Denver, was accorded the honor recently through his election to head the Electrical Coöperative League in that city.

Mr. Headrick started his career in the electrical industry under the direct supervision of George Westinghouse. He was born in Johnstown, Pa., February 22, 1869, and after graduating from the high school in that city in 1888, went to Pittsburgh where he entered Mr. Westinghouse's private laboratory for

E. C. Headrick

the performance of his personal experiments.

In 1900 the Westinghouse company sent him to France as a special representative. After two years abroad he returned to this country to accept a position as assistant shops superintendent in the power apparatus department of the Western Electric Company in Chicago.

Later he went to France again to redesign the engines made by the Rateau Turbine Company for standardizing production in this country. In 1909 he went to Denver and later started a contractor-dealer business of his own which specialized in the handling of motors and heavy machine equipment.

He served as president of the Denver Association of Electrical Contractors and Dealers during the years 1919, 1920 and 1921. In that capacity he used every effort to bring about coöperation within the industry, and became vice-chairman of the Electrical Coöperative League when it was organized in June, 1921. When T. O. Kennedy, the chairman, left Denver, Mr. Headrick was made chairman.

Folders for Dealers

A series of education folders has been issued by the Lighting Fixture Dealers Society of America. These folders are printed in the form of cost cards, and the charts and diagrams clearly explain simple and accurate ways of keeping track of your fixture cost.

For information write to J. A. A. Hamilton of The Hamilton Company, Cleveland, who is chairman of the educational committee of the society.

Southwest Association Meeting

San Antonio has been selected as the place for the 1922 convention of the Southwestern Electrical & Gas Association because of its admirable location and its excellent facilities for handling conventions. The dates are May 3 to May 6.

This convention will be the 18th annual, and will be held jointly by the Southwestern Electrical & Gas Association and the Southwestern Geographic Division of the National Electric Light Association. Delegates are expected from neighboring states including Texas, Oklahoma, Arkansas, and Mississippi. It is announced that this year special entertainment will be provided for the ladies.

Promotion Publicity

"To Lighten Labor is to Lighten Life" is the way the Electrical Coöperative Association of Quebec has captioned a folder which it issued recently to stimulate the buying of electrical devices. This pamphlet deals with the various appliances for the home, explaining their use and their cost in use. After setting forth the reasons for everyone's home being a home electric, readers of the folder are urged to send for free copies of another pamphlet issued by the Association on "Wiring the Home for Convenience and Comfort."

Agent-Jobbers Meet

The annual meeting of the Westinghouse Agent-Jobbers Association will be held at The Homestead, Hot Springs, Va., during the week of May 29.

UMI

Purchasing Agents Show

The official exposition of the National Association of Purchasing Agents known as The Informashow will be held at Exposition Park, Rochester, N. Y., May 15 to May 20. W. L. Chandler, president, says he believes the best medium for demonstrating the factors which make value is an exposition embracing the machinery, materials, equipment, and supplies which are purchased daily in the conduct of business.

This exposition will therefore be a demonstration by the manufacturers who comprise the membership of this association of the factors of value before the large group of purchasing agents who attend these national conventions. It is of course impossible to judge in advance the nature of the exhibits. In general it may be said that the exhibits will comprise anything that comes within the scope of the consideration and activities of purchasing agents, serving a variety of industries.

Radio School Progressing

The wireless school organized by the Newark Electrical Supply Company to meet weekly has been unusually successful thus far. Since its organization was first announced enrollments have been rapidly coming in.

This school was inaugurated to give electragists the knowledge necessary to intelligently operate and sell wireless equipment. The first class was held on March 6. Classes are in charge of J. S. Golon, licensed operator 2 AXQ, who has been for several years an instructor in wireless telephony and telegraphy in the United States Navy.

Every electragist in New Jersey is cordially invited to attend these classes which are free. Meetings are held at seven o'clock on Monday evenings.

New S. E. D. Booklet

More Leisure Hours is the name of a new booklet issued by the Society for Electrical Development, which will help you sell by making people want to buy.

This booklet tells the story of the convenience and utility of electrical appliances in an interesting and convincing manner, and explains in easily understood language the meaning of the more commonly used electrical terms. By keeping the purely commercial and active selling arguments in the background the reader is made to want to own electrical aids by the subtle appeal of comfort, convenience, and economy.

More Leisure Hours is artistically designed and printed in colors. Its size is 3½ x 6¼ inches, and has twenty four pages and cover. Ample provision is made for dealer's imprint, and is furnished either with or without envelopes. Samples and prices will be sent from Society Headquarters at 522 Fifth Avenue, New York City.

Better Lighting Show

A better lighting demonstration was held in Rochester, N. Y., from March 13 to March 25 under the auspices of the National Lamp Works, the Requa Electrical Supply Company of Rochester, and in coöperation with local electragists. The Rochester Gas & Electric Corporation also coöperated to the fullest extent.

A series of demonstrations, showing the most approved methods of illumination and of laying out lighting was given. One or more sessions a day were devoted to the different industries and professions, the opening night being given over to the contractor-dealers. The demonstrations were free.

While contractor-dealers requested the giving of the demonstrations, and much benefit was derived by them through the show, the demonstrations were given primarily as an educational campaign in the interest of consumers of current throughout that section. W. R. Wheellock of the National Lamp Works, under whose direction the demonstrations were held, said the show served as a boon to electragists in enabling them to better serve their customers, and placing their customers in a position to see the importance of proper illumination in their homes, stores or factories.

Local Advertising

The data contained in the pamphlet entitled "Wiring the Home," issued by National Headquarters, has given electragists an opportunity to do some effective advertising. The W. P. Jones Electric Company, successor to W. C. Tewksbury Company, of Milford, Mass., took a half page insertion on the first page of the local daily newspaper, reproducing three of the diagrams and telling how an unwired house could be wired to permit of the convenience and comfort made possible by the completely wired houses as described.

Industrial Exposition in Denver

Two Denver contractor-dealers took a prominent part in the Industrial Exposition recently held in that city under the auspices of the Colorado Manufacturers Association. Over 75,000 people visited the various displays during the week the exposition was held and the amount of electrical business accruing from these two displays is already reported to be several thousand dollars.

The Electrical Coöperative League of Denver helped its two members in puttings over their displays by playing up

J. W. Hancock Electric Co. Booth at Denver Industrial Exposition Attracted Much Attention by Its Combination Display

Booth of Enterprise Electric Co. at Denver—Harry Arthur of this Company, Shown in Picture, Wired Municipal Auditorium for Exposition

the electrical home in that city. Special literature and personal explanation of the conveniences and economy affected through the use of electricity in the home was emphasized to as many visitors as possible.

The interest aroused in many cases led to valuable inquiries about the use, application or practibility of appliances, portable lamps, fixtures, and electrical equipment of every nature, according to S. W. Bishop, executive manager of the League, who assisted with the displays.

Unusually desirable lighting fixtures were shown, also a complete line of heating and other household appliances. J. W. Hancock displayed his new Columbalite and other lighting accessories with a manufacturer of wood fibre products.

Harry Arthur of the Enterprise Electric Company was assisted by A. R.. Woolley of the Edison Electric Appliance Company. To Mr. Arthur is given the credit for the wiring and successful electrical effects effected at the exposition.

Establishes Radio Station

The General Electric Company has announced the establishment of a radio broadcasting station at its plant in Schenectady, N. Y. This station is the most powerful broadcasting station in the country and has been assigned the call numbers W. G. Y.

Beginning its service unheralded and quietly a few weeks ago, W. G. Y. has already been picked up by amateurs in Santa Clara, Cuba, 1,450 miles south, and as far west as Cedar Rapids, Iowa, despite the fact that no attempt has been made to obtain a long distance range.

W. G. Y. is equipped with the most modern radio apparatus including the multiple tuned antenna used on the big transoceanic stations. A three room studio where the programes are produced is located in the company office building, 3,000 feet from the transmitting station.

Home Lighting Booklet

One of the latest accomplishments of the Electrical Development Association of Wisconsin is the issuance of a pamphlet entitled, Home Lighting. Without going into technicalities, this pamphlet covers the subject of home lighting in a very comprehensive manner.

Many illustrations clearly explain the various lighting effects for the different rooms, and the whys and wherefores of each installation are told. The subject of wiring is also completely covered, due stress being laid on the convenience outlet.

Largest Electrical Catalog

The largest electrical catalog in the world was published recently by the Western Electric Company. This book contains 1,892 pages and lists 60,000 different items produced by 236 internationally known manufacturers. While no larger than an ordinary dictionary, it contains 6,450 illustrations, picturing every important class of electrical eqiupment from the ordinary door bell to the most intricate mysteries of the power house. It has been found necessary to print over 45,000 copies of this catalog to fill the wants of customers all over the world.

Inspectors Meet

The next meeting of the Western New England Association of Electrical Inspectors will be held on May 10 in Middletown, Conn. R. J. Forsyth of Greenfield, Mass., is secretary.

Central Station Man Heads Electragists

For the first time in Denver, a central station man has been elected president of the Contractor-Dealers' Association. He is Clarence Keeler, manager of the production department of the Denver Gas and Electric Light Company, whose entire experience in the industry has been with that company.

Clarence Keeler

Going to Denver from his birthplace in Anamosa, Iowa, when but sixteen years of age, Mr. Keeler finished high school. In March, 1896, his first job with the company was in the lamp room. Later he was transferred to line and trouble work and then took charge of the meter department.

In 1913 it was his department that arranged the $50,000 decorative lighting

arrangements for the Knights Templar conclave in Denver.

That same year he started developing the fixture and sign business of his company. His progress can be appreciated when it is known that the annual volume of business was increased from $800 in 1913 to $150,000 in 1921.

Since the reorganization of the Denver Contractor-Dealers' Association in January he has been actively interested in the work. He served as chairman of the fixture division until his election as president. He is also a central station representative on the advisory committee of the Electrical Coöperative League in Denver.

News Notes Concerning Electrical Contractor-Dealers

Business Changes, Store Improvements, and New Establishments Opened

Lawrence T. Baldwin has opened a new electrical fixture store at 742 Wescott Street, Syracuse, New York.

Quality Electric Shop is open for business at 209 Main Street, Mexia, Texas, where a full line of electrical supplies will be carried.

C. J. White is opening an electrical supply store at Ocean Blvd. and Parker Avenue, Long Beach, California.

W. E. MacLaren & A. C. Koestle are reported to have opened a new electrical appliance store in the Masonic Temple Building, Mayfield and Lee Roads, Cleveland Heights, Ohio.

R. G. Engles will open a new store carrying a full line of electrical appliances and auto repairs at Forest Lake, Minnesota.

T. S. Halverson has opened a new electrical supply business at 212 East Second Street, Pomona, California.

George Spiegel is opening a new electrical appliance store at Antigo, Wisconsin.

J. H. Kirkman will open an electrical contracting business at 610 South Tryon Street, Charlotte, North Carolina.

Aaron Electrical Company has opened a new store at 138 Washington Street, Binghamton, New York, where a full line of electrical fixtures and appliances will be carried.

Hunter Company is opening a new electrical contracting business at 209 Main Street, Ridgefield Park, New Jersey.

C. H. Mannion is reported to have opened a new electrical appliance store at Reed City, Michigan.

V. M. Young will open a new store at Columbus, Nebraska. A full line of electrical goods will be carried.

Incandescent Supply Company has opened a new electrical appliance store at 1118 Olive Street, St. Louis, Missouri.

Webb & Cook Electrical Company is opening a new electrical appliance and contracting business at Asheville, North Carolina.

G. F. Roberts & A. H. Roberts have opened a new store at Garfield and Ramona Blvd., Ramona, California, where a full line of electrical supplies will be carried.

Tab Electric Company will open a new electrical supply store at 447 South Broad Street, Trenton, New Jersey.

Crane Electric Company, Inc., is reported to have a new electrical fixture store at 388 Bridge Street, Brooklyn, New York.

E. H. Dittmar is opening an electrical contracting business at Westwood, New Jersey.

Fred Edney has opened a new electrical store at Cozad, Nebraska.

Otis M. Richter will open an electrical appliance and plumbing business at Forest Lake, Minnesota.

Thor Electrical Shop is reported to have opened business at 130 Pearl Street, Grand Rapids, Michigan, where a full line of electrical appliances will be carried.

Louis Schremser is opening a new electrical contracting business at 46 Deslaurier Avenue, Webster, Massachusetts.

Noel Electric Company has opened a new supply store at 1706 Central Avenue, Kansas City, Kansas.

Domestic Electric Company will open an electrical appliance store at 208 East Fourth Street, Davenport, Lowa.

G. W. & James A. Crockett have opened a new store carrying a full line of electrical appliances at 310 North Burdick Street, Kalamazoo, Michigan.

Winter-Horton Electric Company is opening a new electrical appliance and supply business at 418 Third Avenue, Cedar Rapids, Iowa.

Thor Electric Shop will open business at 830 Nicollet Avenue, Minneapolis, Minnesota. A full line of electrical appliances will be carried.

Graham Electric Company has opened a new appliance store at 619 Chandler Avenue, Detroit, Michigan.

Charles Lamlin is reported to have opened a new electrical supply store at Decatur, Indiana.

H. E. Hefner is opening a new electrical appliance store at Lexington, Illinois.

A. E. Rees Electric Company has opened an appliance store at 1607 Meldrum Avenue, Detroit, Michigan.

James Cusack Electric Company is reported to have opened business at 313 Third Avenue, Cedar Rapids,, Iowa, where a full line of electrical appliances will be carried.

Economy Electric Shop will open at 207 North Kentucky Avenue, Lakeland, Florida. A full line of electrical goods will be carried.

Louis Smith & Henry Becker have opened a new electrical appliance store at 107 West Lewis Street, Ft. Wayne, Indiana.

Robert A. Bosch has opened an electrical supply store at 928 Geary Street, San Francisco, California.

R. C. Swailes will open a new electrical appliance store at Mt. Pleasant, Iowa.

Central Electric Supply Company, Inc. is opening business at 315 Colorado Building, Denver, Colorado. Incorporated capital, $15,000. Incorporators: E. V. Beck and others.

Otis M. Richter is reported to have opened a new electrical appliance and plumbing store at Forest Lake, Minnesota.

Diamond K Electric Shop of which F. Karbe is proprietor, will open a new electrical supply store at 333 West 8th Street, Riverside, California.

Cut Rate Electric Company has opened an appliance store at Truslow and State Streets, Charleston, West Virginia.

Ranger Electric Service Station is opening a new electrical supply store at Mexia, Texas.

William Thomas is reported to have opened a new store carrying a full line of electrical supplies at 7740 Santa Monica Blvd., Hollywood, California.

The Coleman Electric Company of Allentown, Pa., has issued a beautifully illustrated catalog of its line of lighting fixtures. The catalog is in loose leaf form and contains eighty-two pages.

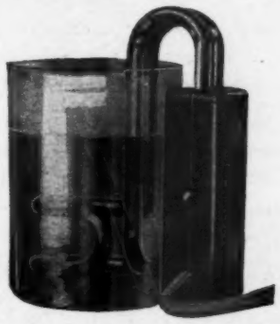
•MANUFACTURING•

A Department Devoted to the Latest Devices Used by the Electrical Contractor and Dealer

Tumbler Water Heater

The tumbler water heater, manufactured by the Westinghouse Electric & Manufacturing Company, is designed to heat a small quantity of water quickly and efficiently.

The product, which is perfectly sanitary, is substantially and durably con-



structed, making it practical for heating any small quantity of liquid. The element is inserted in copper tubing bent to afford a large heating surface. It is nickel plated and highly polished. The through switch of black composition is extra large to provide a convenient rest as well as a practical switch for the heater. The voltage of the heaters ranges from 110 to 120 volts and the wattage is 350. Net weight is one pound.

The heater has three distinctive features; in that it will not tip over the tumbler; it will not break the glass, and it will not burn or scorch the article on which it is laid. When it is placed in a glass of water, it rests on the base of the switch, thus preventing the weight of the heater from tipping the glass.

Externally Operated Switch

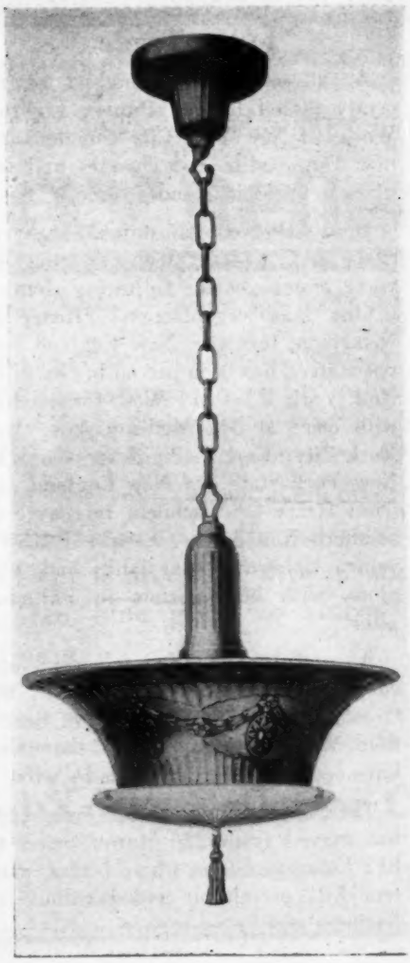
A new type switch was recently placed on the market by the Trumbull Electric Mfg. Co., of Plainville, Conn. The line includes externally operated punched clip type C switches, 30 to 200 amperes, 250 to 500 volt.

The new development represents an addition to the company's line of type A safety machine-made switch. It is a switch of punched clip construction, designed for use where the heavier type A switch is not needed and where it is unnecessary to have the safety interlock-

ing features. Standard box is used as with type A switches.

New Residential Duplexalite

A new Residential Duplexalite has been placed on the market by the Du-



plex Lighting Works of New York City. Art and beauty combined with practicality makes this device of unusual merit.

The principle of lighting in the new Duplexalite is the same as that of the other products of its line. It combines the same basic construction as the Standard Duplexalite, with an enriched quality of metal work and glass. The antique brass is particularly adapted for use in living rooms, and the silver for the illumination of dining rooms.

Light Wire Electric Range

Anyone who has ever kept house in small quarters will appreciate the light wire electric range which has been placed on the market by The Standard Electric Stove Company of Toledo, O.

A cord from a baseboard socket provides the connection, which may be plugged into whichever of the elements it is desired to use at any given time. The housewife may prepare one or two dishes for the fireless cooker compartment hours before the time for dinner. Later she may use the current in the oven, and last minute cooking, just before the meal, will be done on the griddle, on top of the stove.

The compartment cooker is aluminum lined, and contains two elements so that the food may be cooked with 660 watts on high for twenty to thirty minutes after which this may be disconnected and the cooking continued with retained heat.

The oven is fully equipped with racks and contains an aluminum broiling pan. It is constructed by a new method designed to prevent loss of heat by conduction. The double wall door is closed with a lock lever, and fitted with a thermometer.

New Boudoir Lamp

A very attractive boudoir lamp has recently been placed on the market by S. Robert Schwartz & Bro., New York City. Beauty of design and finish are characteristics of this lamp.

The new Esrobert has a special ornamental base of cast metal, 5½ inches in

diameter and 6¾ inches in height. The ornamental shade has been designed to match the base, and consists of metal frame with silk lining, 6 inches in height and 6¾ inches in width.

The lamp is completely wired and is equipped with association push socket, ten feet new code parallel mercerized cord and two-piece association attachment plug. Its height is 14½ inches and its weight 3½ pounds, made in four finishes.

New Rotary Canopy Switch

A very shallow type of rotary switch with a base only three-eights of an inch in depth has been added to the well-known line of push and pull canopy switches made by The Cutler-Hammer

Manufacturing Company of Milwaukee.

The new rotary switch is very small, the diameter being less than one inch and as its depth is but three-eights inch, it is suitable for use in shallow wall brackets, canopies or plates.

Even where this canopy has but one-half inch recess, these switches may be used without cutting away plaster in back of the canopy. Operation is by means of the small rotary button. The rating is one-half amperes, 125 volts.

Modern Street Lighting

Street Lighting Is Your Job is the slogan that has been adopted by the Westinghouse Electric & Manufacturing Company, now conducting a national campaign for better street lighting. The effort is one of the most aggressive of the kind ever planned, and the results are expected to be far reaching in the promotion of installations of modern street lighting systems by municipalities.

Better street lighting stimulates the sale of lighting fixtures and other devices. Especially does the elevation of lighting standards through the installation of modern ornamental posts create a demand for newels to enhance the attractiveness of bridges and buildings and for ornamental brackets to add distinction to both the interior and exterior of public and semi-public buildings, such as libraries, school houses and motion picture theatres.

For these reasons, the electragist is interested in a campaign for better street lighting which if successful not only affords him an opportunity to share in the business of such an installation, but also gives an impetus to his general business that he does not obtain in any other way.

To assist contractors and dealers in promoting the movement for better street lighting, the Illuminating Engineering Bureau of the Westinghouse Companies will supply figures and facts on the best and most efficient methods of illumination.

Condensed Notes of Interest to the Trade

An attractive little pamphlet was recently issued by the Duplex Lighting Works of New York City announcing a new Duplexalite and changes and improvements in its standard line.

Henry D. Sears, Boston, Mass., general sales agent for Weber Wiring Devices, announces the following changes in his sales organization: Henry E. Nickerson, formerly New England representative, has been placed in charge of New York City and West Connecticut with office at 342 Madison Ave., New York City; Carl C. Smith in charge of New York State and New England district; Harry C. Anschuetz, in charge of southern New Jersey, Eastern Pennsylvania, Delaware, Maryland, and Virginia, with headquarters in Philadelphia.

A carefully compiled telegraph and cable code has been published by the Greenfield Tap and Die Corp. of Greenfield, Mass., in the interests of those who have occasion to order goods by wire.

The F. Bissell Company of Toledo, O., has moved from 226 Huron Street to 812 Lafayette Street where larger quarters will permit an added volume of business and better service.

In order to make the dealers' work in obtaining lighting sales easier the Beardslee Chandelier Mfg. Co., of Chicago, has prepared a new Denzar catalog explaining the Denzar features of illumination.

A new bulletin has been issued by the Holophane Glass Co., of New York City, describing its portable lightmeter for measuring candle power, coefficients of reflection, transmission factors, and color matching.

"A Breeze that Blows Profits Your Direction" is the title of a booklet published by the Robbins and Myers Company of Springfield, O., containing advertising helps for the dealer and sales information for the man behind the counter.

The P. A. Geier Company of Cleveland announces a price reduction on its new model Royal vibrator.

A substantial increase in business is reported by the F. W. Wakefield Brass Co., of Vermilion, O., its output since the first of the year being about 100 per cent above the same period last year.

A-A Wire Company, Inc. of New York City announces the opening of a Cleveland office in charge of A. B. Baker, to take care of the growing business in this territory.

A. H. Petersen Mfg. Co., of Milwaukee, Wis., announces the appointment of William G. Brown as general sales manager. Mr. Brown was formerly western sales manager of the American Bosch Magneto Co.

The Connecticut Telephone & Electric Company of Meriden, Conn., announces the following appointments: C. H. Moulton in charge of New England territory, located at 24 Milk St., Boston; New York City district, Charles A. Kirkland, at 39 Cortlandt St., New York City; O. T. Jenkins in charge of southern territory at Dallas Bank Bldg., Dallas, Texas.

The Westinghouse Company announces the following changes in its personnel: J. Andrews, Jr., at Pittsburgh office has been appointed manager of the Cleveland office; W. R. Keagy has been appointed office manager of the Cincinnati office, and J. R. Deering office manager of the Los Angeles office.

A campaign for "over the counter" merchandising of small motors has been launched by the Westinghouse Electric & Mfg. Co.

After Good Window Lighting—What?

Carson's windows at Minneapolis, always lighted with "Jove" X-Ray Reflectors, are now fitted with Color-Ray units for colored lighting. The "Jove" reflector with Color-Ray attachment is shown above.

Merchants everywhere make their windows SELL by lighting them with

X-Ray Reflectors

EVERLASTING BRILLIANCY

The Standard for Show Window Lighting for over 25 years

The leading show windows are now being lighted in colors with X-Ray Color-Ray, because colored lighting compels more favorable attention.

Attaching Color-Ray Frame

Color-Ray No. 66 is a separate unit to attach to Jove or Jupiter X-Ray Reflectors. The metal frame is attached to the reflector and the colored light is produced thru gelatin color screens, (red, blue, green or amber) placed in this frame.

Inserting slide in frame

Do you want a copy of our new booklet "Color Lighting in Show Windows—What it is and How to Use It?"

Immediate Shipments From Jobbers Stocks

National X-Ray Reflector Company

New York
31 West 46th Street

CHICAGO
235 West Jackson Blvd.

Los Angeles
804 Security Bldg.

Engineers in all principal cities

THE MARKET PLACE

To Buy or Sell Used Material
For Help Wanted
For Situations Wanted

RATE :
One Inch **$1.00** *Per Insertion*

HELP WANTED

Wanted—By an old established electrical contracting firm in growing Southern town of 175,000 people, an executive and manager who is capable of soliciting, estimating and superintending all classes of electrical construction. We have a retail store selling fixtures, appliances and supplies. Position permanent. Remuneration—salary and percentage. Good thing for right kind of man. Give age, experience, references, salary wanted, etc. Write Box Y, c|o NATIONAL ELECTRAGIST, 15 West 37th Street, New York City. 3t-1

Wanted to Buy—Well established electrical contracting and appliance shop in western or southwestern city of not less than 20,000 population. Address Box Z, c|o NATIONAL ELECTRAGIST, 15 West 37th Street, New York City. 1t-3

Wanted—Established lighting fixture manufacturer requires experienced salesman. Remuneration, salary and percentage. Give age, experience, and references, also salary wanted. Write Box A, c|o NATIONAL ELECTRAGIST, 15 West 37th Street, New York City. 1t-3

Wanted—A manufacturing company of world wide reputation is ready to market an improved farm lighting plant and wants:

Experienced men with an intimate knowledge of the farm market to direct sales through dealers.

Mechanically trained men to instruct dealers and users in the installation and care of farm lighting plants.

Excellent opportunities both at headquarters and in the field for energetic, trained men of good personality and dependability.

Applicants should state age, education, past experience in the farm field, and any other qualifications.

Applications treated confidentially.

Address: Box B, c|o NATIONAL ELECTRAGIST, 15 West 37th Street, New York City. 1t-3

Situation Wanted—Position as manager or superintendent with an electrical contractor-dealer. Technical education and 10 years' experience; age 36. Willing to invest in concern that can show good balance sheet. Address: Box C, c|o NATIONAL ELECTRAGIST, 15 West 37th Street, New York City. 1t-4

Situation Wanted—Annapolis graduate, Class, 1917, holding Chief Engineer's license, with capital to invest, desires position and interest in electrical manufacturing concern. Box D, c|o NATIONAL ELECTRAGIST, 15 West 37th Street, New York City. 1t-4

For Rent—Part of store, about 1600 square feet. Ideal location for show or sales rooms for radiophone or electrical supply jobber; low rent. Address: Acme Lighting Fixture Company, 107 West 13th Street, New York City. Telephone: Chelsea 672. 1t-4

Help Wanted—Old established electrical engineering and contracting firm in New York City requires experienced man to estimate and solicit new work on a commission basis. Excellent opportunity for right man. Write giving full particulars. Address: George Weiderman Electric Co., Inc., 35 Rose Street, New York City. 1t-4

IN YOUR NEXT GARAGE SPECIFICATIONS

be sure to include a "Master" Garage pump. Popular with every garage owner.

All steel pistons, no leather or rubber packings—insures maximum durability and efficiency.

Send for catalogue and agent's offer.

Hartford Machine Screw Co.

HARTFORD, CONN.

409 Broome St. NEW YORK
4612 Woodward Ave. DETROIT

THEO. AUDEL & CO., Publishers, 72 FIFTH AVENUE, NEW YORK.
Please submit for FREE EXAMINATION Hawkins' Electrical Guides—10 numbers at $1 each. If satisfactory I agree to remit $1 a month until paid

Employed by _____
Name _____ Residence _____
Occupation _____ EL. CON.

Electricity at your finger ends

Know the facts in Electricity. They mean more money and better position for you. Hawkins Guides tell you all you need to know about Electricity.

Every important electrical subject covered so you can understand it. Easy to study and apply. A complete, practical working course, in 10 volumes.

Books are pocket size; flexible covers. Order a set to-day to look over.

HAWKINS GUIDES

3500 PAGES **$1 A VOLUME**
4700 PICTURES **$1 A MONTH**

These books tell you all about—

Magnetism—Induction—Experiments—Dynamos—Electric Machinery—Motors—Armatures—Armature Windings—Installing of Dynamos—Electrical Instrument Testing—Practical Management of Dynamos and Motors—Distribution Systems—Wiring—Wiring Diagrams—Sign Flashers—Storage Batteries—Principles of Alternating Currents and Alternators—Alternating Current Motors—Transformers—Converters—Rectifiers—Alternating Current Systems—Circuit Breakers—Measuring Instruments—Switch Boards—Wiring—Power Stations—Installing—Telephone—Telegraph—Wireless—Bells—Lighting—Railways. Also many Modern Practical Applications of Electricity and Ready Reference Index.

SHIPPED TO YOU FREE

Not a cent to pay until you see the books. No obligation to buy unless you are satisfied. Send Coupon now—today—and get this great help library and see if it is not worth $100 to you—pay $1.00 a month for ten months or return it.

"Buy Electrical Supplies from Electrical Supply Jobbers"

QUICK REFERENCE LIST for the Convenient Use of Contractor-Dealers, in which Electrical Supply Jobbers in various Sections invite Your Patronage

Deal with a jobber that has always recognized the electrical contractor and where you can depend upon

HIGHEST GRADE OF ELECTRICAL MATERIALS

Right Prices and Immediate Delivery

Baltimore Electrical Supply Co.
BALTIMORE, MD.

American Electrical Supply Company
955 WASHINGTON BLVD.,
Chicago

A jobbing distributor which conducts its business with a full realization of its responsibilities to other branches as well as its own branch of the electrical industry.

FOBES SUPPLY COMPANY

Wholesale Electrical Supplies

SEATTLE SAN FRANCISCO
PORTLAND OAKLAND

ELECTRIC SUPPLY & EQUIP. CO.
Warehouses
HARTFORD SCRANTON
ALBANY READING
Sales Offices
1270 Broadway, New York City.
Wholesale Only Policy
Established 10 B. G. (Before Goodwin).

25 YEARS' RELIABLE SERVICE—
Complete Stocks, High Grade Electrical Supplies, I.X.L. Rubber Covered and W.P. Wires, Bryant, Hubbell and Arrow E Specialties, Unilet Conduit Fittings, Edison Mazda Lamps, Manning Bowman Heating Devices, Crystal and Rotapex Washing Machines, Sweeper-Vac and Apex Cleaners, Capitol Ironers, Gould Storage Batteries, Radio Supplies, etc.

DOUBLEDAY-HILL ELECTRIC CO.
WHOLESALE
Pittsburgh, Pa. Washington, D. C.

LARGE STOCK PROMPT SHIPMENT

Oldest and Largest Electrical Supply Jobbers in New Jersey.

Newark Electrical Supply Co.
"The House of Quick Service"
223 Market Street Newark, N. J.

SOUTHERN ELECTRIC COMPANY
—DISTRIBUTING JOBBERS—
Electrical Merchandise
Household Labor-Saving Appliances—Lighting Fixtures for Home, Office and Factory—Edison Mazda Lamps—Wiring Supplies, Etc.
BALTIMORE, MD. RICHMOND, VA.

OVER Forty Years of Constant Observation and Study of Your Requirements in Electrical Supplies.

National Electrical Supply Company
DISTRIBUTORS—JOBBERS
1328-30 New York Ave., Washington, D. C.
More than 100,000 Square Feet of Floor Space.
Large Stock. Prompt Shipments.
QUALITY! SERVICE!

Yours for Co-operation

Brooklyn Electrical Supply Co.
56 Myrtle Ave., Brooklyn, N. Y.

For Service—

RUMSEY ELECTRIC COMPANY
1007 ARCH ST., PHILADELPHIA
Distributors
Electric Supplies and Machinery

Where to Purchase Lighting Fixtures

READY REFERENCE LIST of Lighting Fixture Manufacturers for the convenience of Electrical Contractor-Dealers.

Designers and Manufacturers Lighting Fixtures of Good Taste at Moderate Prices

ACME LIGHTING FIXTURE CO. INC.

107-109 W. 13th St. New York

"Planetlites Boost Your Profits"

and satisfy your customers

Write for full Particulars

PLANETLITE CO., Inc.

MANUFACTURED IN THREE SIZES

15 EAST 40TH STREET NEW YORK CITY

CLINTON FIXTURES are well known not only to the trade, but also to private homes.

Send us your specifications

CLINTON METAL LAMP CO.

57 Chrystie St., NEW YORK

No 5335 DESIGN PATENT

Shapiro & Aronson, Inc.

Lighting Fixture Manufacturers

Build your business with S. & A. *Standardized Lighting Fixtures* in *Standardized Finishes*. They combine the "made-to-order" *look* with prices rivaling those offered on ordinary "ready-made" fixtures.

20 Warren Street, New York City

Frankelite Quality Lighting Fixtures

Write for catalogue "B."

The ideal behind our organization has always been to gain the confidence of the dealer by supplying him merchandise of the highest quality, *that will sell* and that will net him the margin of profit he deserves.

FRANKEL LIGHT COMPANY

Manufacturers of

SPINNINGS, STAMPINGS AND ASSEMBLED FIXTURES

5016 Woodland Ave., Cleveland, Ohio

You are cordially invited to visit our new Show Room Display of

WILLIAMSON LIGHTING FIXTURES

and ELECTRICAL APPLIANCES

FULLERTON ELECTRIC COMPANY

230 WEST 17TH STREET, NEW YORK CITY

BRANCH—232 MARKET STREET, NEWARK, N. J.

Have you received your copy of our Catalog?

It's filled with artistic Lighting Fixtures, Portables and Floor Lamps. Send for your copy now!

CHICAGO REEDWARE MFG. CO.

3127 WEST CHICAGO AVE. CHICAGO, ILL.

MORE SALES

—IF YOU SPECIFY—

X-Ray Reflectors

—FOR—

Show Window Lighting

NATIONAL X-RAY REFLECTOR COMPANY

CHICAGO

NEW YORK SAN FRANCISCO

NEW BUSINESS RECORD

for the

Electrical Merchant-Contractor

Just Issued

Send to National Headquarters for full particulars.

GET YOUR COPY OF THE

HOLOPHANE DATALOG

A Book of 156 Pages, Pocket Size.

Copies are lent (not given) to individual contractors upon request. Write on your business letterhead to

Holophane Glass Company, Inc.

Dept. A-33

340 Madison Avenue, New York.

Holophane Reflectors are distributed in accordance with the principle of the Goodwin Plan.

Expert Opinion

"When it comes to simplicity, I want to say that I have never seen anything equal to this bookkeeping system. It is one of the best things I have ever seen."

So says Frank Stockdale, an acknowledged authority on business efficiency.

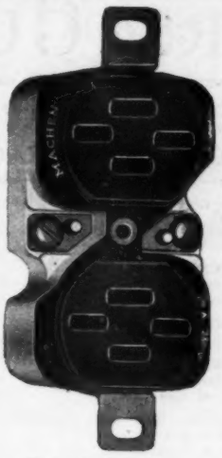
He was speaking of the

New Standard Accounting System

For Electrical Contractors and Dealers

If you don't already know about it, it will pay you to make inquiry through the

NATIONAL ASSOCIATION OF ELECTRICAL CONTRACTORS AND DEALERS
15 West 37th St., New York City



Patents Pending, Duplex Type Gives Two Outlets from Single Box

"No-Lus-Plug" Type
(No loose plug)
Standard Receptacles

Take all Standard prong types of Plugs.

BUT—they are different from any other Receptacle on the market.

BECAUSE—no matter how roughly handled, **the plugs will not work loose.**

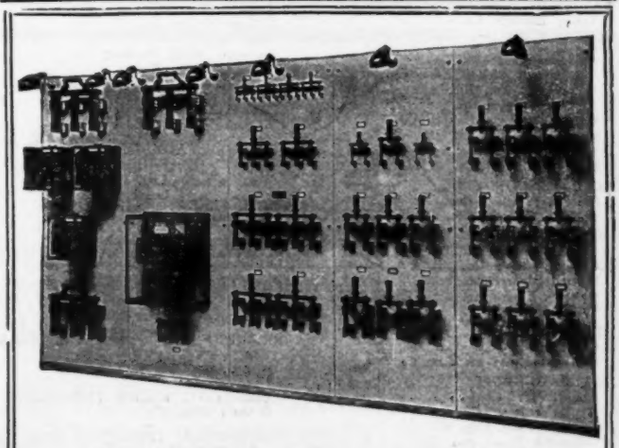
The Mirror-bright, Black Enamel finish of the Porcelain base gives a Visible Quality not found in any similar device.

MADE SINGLE AND DUPLEX

Samples and descriptive circulars sent on request.

Machen Electric Manufacturing Company

NEW YORK CITY, 1 Union Square. CHICAGO, 549 W. Washington St.
DETROIT, 518 Brush St. BOSTON, 12 Pearl St.
SAN FRANCISCO, Sheldon Bldg. PITTSBURGH, PA., 422 First Avenue



WURDACK

SWITCHBOARDS
PANEL BOARDS
STEEL CABINETS
KNIFE SWITCHES

LET US
FIGURE
YOUR
REQUIREMENTS.

WM. WURDACK ELECTRIC MFG. COMPANY
ST. LOUIS, MO.

BUYERS' GUIDE

of some of the products manufactured by the concerns advertising in this issue. To be listed here is a badge of reliability. To buy from here is a guarantee of satisfaction. When you buy from here please mention the NATIONAL ELECTRAGIST

A. C. FLOATING BATTERY SYSTEM
Valley Electric Co.

ADAPTERS, LAMP
Bryant Elec. Co.
General Elec. Co.
Hubbell, Inc., Harvey

ADJUSTERS, CORD AND LAMP
Crouse-Hinds Co.
McGill Mfg. Co.

ALARMS, BURGLAR, FIRE
Conn. Telephone & Elec. Co.
Crouse-Hinds Co.
Edwards & Co., Inc.
Partrick & Wilkins Co.
Stanley & Patterson.
Western Elec. Co.

ANCHORS, GUY, ALSO RODS
Crouse-Hinds Co.
Richards & Co., Geo.

ANNUNCIATORS
Ansonia Elec. Co.
Conn. Telephone & Elec. Co.
Edwards & Co., Inc.
Ostrander & Co., W. R.
Partrick & Wilkins Co.
Stanley & Patterson.

ARRESTERS, LIGHTNING
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

ASBESTOS WOOD
Johns-Manville, Inc.

ATTACHMENTS, SOCKET
Hubbell, Inc., Harvey

BATTERIES, DRY
Manhattan Elec. Supply Co.
Stanley & Patterson.

BATTERY CHARGING OUTFITS
Valley Electric Co.

CELLS, ELECTRIC
Ansonia Elec. Co.
Connecticut Tel. & Elec. Co.
Edwards & Co., Inc.
Electrical Sales Co.
Manhattan Elec. Supply Co.
Ostrander & Co., W. R.
Partrick & Wilkins.
Stanley & Patterson.

BENDERS, CONDUIT
Steel City Elec. Co.
Thomas & Betts Co.

BLOCKS, MOLDING
Bryant Electric Co.
Gillette-Vibber Co.
Mutual Elec. & Mach. Co.
Roberts Elec. Sup. Co., H. C.
V. V. Fittings Co.

BOLTS, TOGGLE
Cutter Co., Geo.
National Metal Molding Co.

BOXES, CONDUIT
Adapti Mfg. Co.
Appleton Elec. Co.
Chicago Fuse Mfg. Co.
Columbia Metal Box Co.
Crouse-Hinds Co.
Cutter Co., Geo.
Hart Mfg. Co.
National Metal Molding Co.
Sprague Elec. Works.
Steel City Elec. Co.
Thomas & Betts Co.
V. V. Fittings Co.
Wurdack Elec. Mfg. Co.

BOXES, FLOOR
Frank Adam Electric Co.
Crouse-Hinds Co.
Sprague Elec. Works.
Stanley & Patterson.
Steel City Elec. Co.
Thomas & Betts Co.
Westinghouse Elec. & Mfg. Co.

BOXES, MANHOLE (JUNCTION)
Frank Adam Electric Co.
Crouse-Hinds Co.
General Elec. Co.
Johns-Manville, Inc.

BOXES, METER PROTECTING BOXES
Crouse-Hinds Co.
General Elec. Co.
Johns-Manville, Inc.

BOXES, PULL
Columbia Metal Box Co.
Crouse-Hinds Co.

BOXES, WOOD OR CABINET
Crouse-Hinds Co.
Stanley & Patterson.

BRACKETS, TELEPHONE
Stanley & Patterson.
Western Elec. Co.

BRUSHES, COMMUTATOR
Calebaugh Self-Lubricating Carbon Co.

BRUSHES
Cutler-Hammer Mfg. Co.
General Elec. Co.

BUSHINGS, BOX AND CABINET
Fralick & Co., S. R.
Pass & Seymour.
V. V. Fittings Co.
Westinghouse Elec. & Mfg. Co.

CABINETS, METAL
Frank Adam Electric Co.
Columbia Metal Box Co.
Cutter Co., Geo.
Mutual Elec. & Mach. Co.
Thomas & Betts Co.
Wurdack Elec. Mfg. Co.

CHARGING OUTFITS
Cutler-Hammer Mfg. Co.
General Elec. Co.
Robbins & Myers Co.
Valley Electric Co.
Westinghouse Elec. & Mfg. Co.

CIRCUIT BREAKERS, AUTOMATIC
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

CLAMPS, CABLE SUPPORTING
Steel City Elec. Co

CLAMPS, GROUND CONNECTION
Columbia Metal Box Co.
Fralick & Co., S. R.
General Elec. Co.
Gillette-Vibber Co.
Hart Mfg. Co.
National Metal Molding Co.
Sprague Elec. Works.
Thomas & Betts Co.

CLAMPS TEST
Appleton Elec. Co.

CLEANERS, VACUUM
Apex Electrical Distributing Co.
Western Elec. Co.

CLIPS, FUSE
Bryant Electric Co.

CLUTCHES, MAGNETIC
Cutler-Hammer Mfg. Co.

COILS, CHOKE
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

COLORING AND FROSTING, INCANDESCENT LAMPS
McGill Mfg. Co.

CONCENTRIC, WIRING FITTINGS
General Elec. Co.

CONDENSERS, TELEPHONE AND TELEGRAPH
Connecticut Tel. & Elec. Co.
Western Elec. Co.

CONDUIT, INTERIOR
Alphaduct Co.
American Circular Loom Co.
Clifton Mfg. Co.
Enameled Metals Co.
National Metal Molding Co.
Saylor Elec. & Mfg. Co.
Sprague Elec. Works.
Steel City Elec. Co.
Trumbull Elec. Mfg. Co.
Tubular Woven Fabric Co.

CONDUIT, UNDERGROUND
Johns-Manville, Inc.

CONDULETS
Crouse-Hinds Co.

CONNECTORS, BRASS CYLINDER
Bryant Elec. Co.
Frankel Connector Co.
Trumbull Elec. Mfg. Co.

CONNECTORS, EXTENSION CORD
Hubbell, Inc., Harvey.

CONNECTORS, FIXTURE
H. B. Sherman Mfg. Co.

CONNECTORS, SLEEVE
Bryant Elec. Co.

CONNECTORS, SOLDERLESS
Columbia Metal Box Co.
Dossert & Co.
Frankel Connector Co.
Westinghouse Elec. & Mfg. Co.

COOKING UTENSILS, ELECTRIC
Landers, Frary & Clark.
Manhattan Elec. Supply Co.
Westinghouse Elec. & Mfg. Co.

COUPLINGS, SHAFT
General Elec. Co.

CUTOUTS
Arrow Electric Co.
Bryant Elec. Co.
Chicago Fuse Mfg. Co.
Columbia Metal Box Co.
Crouse-Hinds Co.
Cutter Co., Geo.
Freeman Elec. Co., E. H.
General Elec. Co.
Johns-Manville, Inc.
Pass & Seymour, Inc.
Trumbull Elec. Mfg. Co.
Westinghouse Elec. & Mfg. Co.

DECORATIVE LIGHTING
General Elec. Co.
Holophane Glass Co.

DRIERS, HAIR
Landers, Frary & Clark

DYNAMOMETERS
Sprague Elec. Works

ELEVATOR SAFETY DEVICES
Cutler-Hammer Mfg. Co.

FANS, DIRECT CURRENT
Western Elec. Co.
Westinghouse Elec. & Mfg. Co.

FANS, HANGERS
Adam Electric Co., Frank

FANS, MOTOR
Century Elec. Co.
Emerson Elec. Mfg. Co.
General Elec. Co.
Manhattan Elec. Supply Co.
Robbins & Myers Co.
Sprague Elec. Works.
Westinghouse Elec. & Mfg. Co.

FARM LIGHTING GENERATORS
Valley Electric Co.

FIBRE
Johns-Manville, Inc.
Russell Specialty Mfg. Co.

FITTINGS, FIXTURE, IRON
Appleton Elec. Co.
Beardslee Chandelier Mfg. Co.
Benjamin Electric Mfg. Co.
Bryant Elec. Co.
Crouse-Hinds Co.
Cutter Co., Geo.
Electric Appliance Co.
General Elec. Co.
National Metal Molding Co.
Sprague Elec. Works.
Steel City Electric Co.
Trumbull Electric Mfg. Co.
V. V. Fittings Co.
Westinghouse Elec. & Mfg. Co.

FIXTURES, SHOW CASES AND WINDOWS
Benjamin Electric Mfg. Co.

FIXTURE STUDS
Fralick & Co., S. R.

FLOOD LIGHTS
Crouse-Hinds Co.

FURNACES, ELECTRIC
General Electric Co.

FUSES, ENCLOSED
Bryant Electric Co.
Bussmann Mfg. Co.
Chicago Fuse & Mfg. Co.
Federal Sign System (Electric)
General Electric Co.
Johns-Manville, Inc.
Westinghouse Elec. & Mfg. Co.

FUSES, OPEN LINK
Chicago Fuse & Mfg. Co.
General Electric Co.

FUSES, TELEPHONE
Chicago Fuse & Mfg. Co.
Western Elec. Co.

GENERATORS, LIGHT AND POWER
Emerson Elec. Mfg. Co.
General Electric Co.
Robbins & Myers Co.
Sprague Electric Works.
Westinghouse Elec. & Mfg. Co.

GLASSWARE
Ivanhoe-Regent Works.
National X-Ray Reflector Co.

GUARDS, LAMP
Hubbell, Inc., Harvey.
McGill Mfg. Co.
V. V. Fittings Co.

HANGERS, ARC LAMP
Cutter Co., Geo.
General Electric Co.

HANGERS, CONDUIT AND CABLE
Appleton Elec. Co.
Columbia Metal Box Co.
Mineralac Elec. Co.
Pass & Seymour, Inc.
Steel City Elec. Co.
Thomas & Betts Co.

HANGERS, FIXTURE AND BOX
Cutter Co., Geo.

HANGERS, LAMP
Bryant Elec. Co.

HEATERS, AIR, WATER, METAL, CANDY
Cutler-Hammer Mfg. Co.

HEATERS, INDUSTRIAL SERVICE
Cutler-Hammer Mfg. Co.

HEATERS, LIQUID
General Electric Co.
Landers, Frary & Clark.
Westinghouse Elec. & Mfg. Co.

HEATING DEVICES
Westinghouse Elec. & Mfg. Co.

HOLDERS, SHADE
Hubbell, Inc., Harvey.
National X-Ray Reflector Co.

HOLDERS, BATTERY
Ostrander & Co., W. R.
Stanley & Patterson.

IGNITION OUTFITS
Western Elec. Co.

INSTRUMENTS, INDICATING
General Electric Co.
Norton Electrical Instrument Co.
Westinghouse Elec. & Mfg. Co.

INSTRUMENTS, LAMP TESTING
General Elec. Co.

INSTRUMENTS, MINIATURE SWITCHBOARD
General Elec. Co.
Norton Electrical Instrument Co.
Westinghouse Elec. & Mfg. Co.

INSTRUMENTS, POCKET
Connecticut Tel. & Elec. Co.

INSTRUMENTS, RECORDING AND CURVE DRAWING
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

INSTRUMENTS, TESTING
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

INSULATION, MOLDED
Belden Mfg. Co.
Johns-Manville, Inc.

INSULATORS, CANOPY
General Elec. Co.

INSULATORS, HIGH VOLTAGE
General Elec. Co.
Johns-Manville, Inc.
Westinghouse Elec. & Mfg. Co.

INSULATORS, TREE
Cutter Co., Geo.

IRONS, CURLING
Landers, Frary & Clark
Westinghouse Elec. & Mfg. Co.

IRONS, PRESSING
Cutler-Hammer Mfg. Co.

IRONS, SAD
Landers, Frary & Clark.

IRONS, SOLDERING
Cutler-Hammer Mfg. Co.
General Elec. Co.

JOINTS, CABLE
Dossert & Co.

JOINTS, FIXTURE INSULATING
Thomas & Betts Co.

LAMPS, ARC
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

LAMPS, AUTOMOBILE
Connecticut Tel. & Elec. Co.

LAMPS, INCANDESCENT
Edison Lamp Works.
General Electric Co.
Hubbell, Inc., Harvey.
Hygrade Lamp Co.
National Lamp Works.
Westinghouse Lamp Co.

LAMPS, PHOTO-ENGRAVING
General Elec. Co.

The Contractor

wants a conduit with clean threads and smooth interiors so that he can install and fish it easily. And for the sake of his customer he wants a conduit protected from rust.

Clifton Conduit

Enameled or Galvanized,

is a practical conduit exactly suited to the contractor's needs. It is made from high-grade steel pipe carefully enameled or galvanized to protect it from corrosion. And the threads are sharp.

Clifton Manufacturing Co.

BOSTON, 61 Brookside Ave. 30
NEW YORK, 26 Cortlandt Street
BUFFALO, 34 Sayre Street
SAN FRANCISCO, 509 Mission Street
CHICAGO, 9 So. Clinton Street
Friction Tape. Splicing Compound.

Dossert Connectors

Making solderless connections 2-way, showing detail

How You Can Save

The Dossert Solderless, is the standardized method of making electrical connections—because the Dossert Tapered Sleeve principle is the accepted method of giving better conductivity at the joint than in the wire itself.

The Dossert 15th Year Book shows you the economy of using these connectors for all your wiring.

GET THIS BOOK

FREE!

Dossert & Co.
242 West 41st Street
NEW YORK, N. Y.

Do You Read

—these advertising pages every month? Do you take advantage of the many opportunities offered by advertisers in these pages?

EVERY NUMBER OF THIS PUBLICATION IS A COMPOSITE CATALOG OF NEW AND USEFUL THINGS FOR THE CONTRACTOR-DEALER, AND FOR THOSE WHO ARE ENGAGED IN THE ELECTRICAL INDUSTRY

Every person connected with your business should read every issue of this publication—

For Profit

BUYER'S GUIDE—*Continued*

LAMPS, TROUBLE, AUTOMOBILE, PORTABLE, HAND
Connecticut Tel. & Elec. Co.
Stanley & Patterson.

LIGHTS, STAGE
Sprague Elec. Wks.
Western Elec. Co.

LOCKS, AUTOMOBILE
Connecticut Tel. & Elec. Co.

LOCKNUTS
Fralick & Co., S. R.

LUGS, TERMINAL
Crouse-Hinds Co.
Cutter Co., Geo.
Dossert & Co.
Trumbull Elec. Mfg. Co.

MAGNETIZERS
Valley Electric Co.

MOLDED INSULATION
Belden Mfg. Co.
Cutler-Hammer Mfg. Co.
Johns-Manville, Inc.
Westinghouse Elec. & Mfg. Co.

MOLDINGS, METALLIC
Appleton Elec. Co.
National Metal Molding Co.

MOTOR GENERATORS
General Electric Co.
Sprague Elec. Wks.
Valley Electric Co.
Westinghouse Elec. & Mfg. Co.

MOTORS, POWER
Century Electric Co.
Emerson Elec. Mfg. Co.
General Elec. Co.
Robbins & Myers Co.
Sprague Elec. Works.
Valley Electric Co.
Western Elec. Co.
Westinghouse Elec. & Mfg. Co.

OPENERS AND LOCKS, DOOR
Edwards & Co.

OZONIZERS, INDUSTRIAL
Sprague Elec. Wks.

PADS, HEATING
Landers, Frary & Clark.

PAINTS AND COMPOUNDS
D & W Fuse Co.
General Elec. Co.
Johns-Manville, Inc.
McGill Mfg. Co.
Minerallac Elec. Co.
Standard Underground Cable Co.

PANEL BOARDS
Adam Electric Co., Frank
Crouse-Hinds Co.
Trumbull Electric Mfg. Co.
Westinghouse Elec. & Mfg. Co.

PERCOLATORS
Landers, Frary & Clark.
Westinghouse Elec. & Mfg. Co.

PLANTS, LIGHTING
General Elec. Co.
Western Elec. Co.
Westinghouse Elec. & Mfg. Co.

PLATES, FLUSH SWITCH
Arrow Electric Co.
Bryant Elec. Co.
Connecticut Tele. & Elec. Co.
Hubbell, Inc., Harvey.

PLUGS AND RECEPTACLES
Arrow Electric Co.
Bryant Electric Co.
Chicago Fuse Mfg. Co.
Cutler-Hammer Mfg. Co.
Cutter Co., Geo.
D & W Fuse Co.
Freeman Electric Co.
General Elec. Co.
Hart Mfg. Co.
Hubbell, Inc., Harvey.
Johns-Manville, Inc.
National Metal Molding Co.
Pass & Seymour, Inc.
Sprague Elec. Wks.
Stanley & Patterson.
Trumbull Electric Mfg. Co.
Westinghouse Elec. & Mfg. Co.

PLUGS, CONDUIT
Trumbull Elec. Mfg. Co.

PLUGS, SPARK
Western Elec. Co.

POLE LINE HARDWARDE
Cutter Co., Geo.
Johns-Manville, Inc.
National Metal Molding Co.

PORCELAIN, STANDARD
General Elec. Co.
Trenton Porcelain Co.

PORTABLES
Beardslee Chandelier Mfg. Co.

POSTS, LAMP, ORNAMENTAL
Cutter Co., Geo.

POTS, MELTING
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

PROJECTORS, ELECTRIC
Crouse-Hinds Co.
Cutter Co., Geo.
General Elec. Co.
National X-Ray Reflector Co.
Western Elec. Co.

PROTECTORS, LINEMEN'S
Minerallac Elec. Co.

PROTECTORS, THREAD, CONDUIT
Enameled Metals Co.

PROTECTORS
Connecticut Tel. & Elec. Co.
Minerallac Elec. Co.
Partrick & Wilkins Co.
Stanley & Patterson.

PUSH BUTTONS
Edwards & Co., Inc.

RADIATORS, ELECTRIC
Landers, Frary & Clark.
Westinghouse Elec. & Mfg. Co

RANGES, ELECTRIC
Ivanhoe-Regent Works
Landers, Frary & Clark.
Westinghouse Elec. & Mfg. Co.

REFLECTORS
National X-Ray Reflector Co.
Overbagh & Ayres Mfg. Co.

REFLECTORS, PORCELAIN, ENAMELED, IRON AND STEEL
Cutter Co., Geo.
Hubbell, Inc., Harvey.
Overbagh & Ayres Mfg. Co.

REGULATORS, VOLTAGE
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

RHEOSTATS
Cutler-Hammer Mfg. Co.
General Elec. Co.
Valley Electric Co.
Westinghouse Elec. & Mfg. Co.

ROSETTES
Adapti Mfg. Co.
Arrow Electric Co.
Bryant Elec. Co.
Crouse-Hinds Co.
Freeman Elec. Co., E. H.
General Elec. Co.
Hubbell, Inc., Harvey.
National Metal Molding Co.
Pass & Seymour, Inc.
Trumbull Electric Mfg. Co.

SAMOVARS
Landers, Frary & Clark.
Westinghouse Elec. & Mfg. Co.

SHADES, METALLIC
Hubbell, Inc., Harvey.
Ostrander & Co., W. R.
Overbagh & Ayres Mfg. Co.

SIGNALS, FACTORY AND OFFICE
Stanley & Patterson.

SIGNS, EXIT
Sprague Elec. Wks.

SLATE
Mutual Elec. & Mach. Co.

SOCKETS AND RECEPTACLES
Appleton Elec. Co.
Arrow Electric Co.
Crouse-Hinds Co.
Cutler-Hammer Mfg. Co.
Cutter Co., Geo.
Freeman Electric Co., E. H.
General Elec. Co.
Hubbell, Inc., Harvey.
Johns-Manville, Inc.
National Metal Molding Co.
Ostrander & Co., W. R.
Pass & Seymour, Inc.
Sears, H. D.
Stanley & Patterson.
Trumbull Electric Co., Inc.
V. V. Fittings Co.

SOLDERLESS CONNECTORS
Frankel Connector Co.

SOLDERING COMPOUNDS
Benson Co., Alex. R.
Westinghouse Elec. & Mfg. Co.

STARTERS, MOTOR
Cutler-Hammer Mfg. Co.
General Elec. Co.

STERILIZERS, WATER, ELECTRIC
Sprague Elec. Wks.

STOVES, DISC
Landers, Frary & Clark.
Westinghouse Elec. & Mfg. Co.

STRAPS AND CLAMPS, CONDUIT
Fralick & Co., S. R.

SUPPLIES, ELECTRICAL
Adam Electric Co., Frank.
Electric Appliance Co.
Fullerton, F. W. L.
Ostrander & Co., W. R.
Stanley & Patterson.
Western Electric Co.

SWITCHBOARDS, LIGHT AND POWER
Adam Electric Co., Frank.
Bryant Electric Co.
Condit Electrical Mfg. Co.
Crouse-Hinds Co.
Cutter Co., Geo.
General Elec. Co.
Mutual Elec. & Mach. Co.
Sprague Elec. Wks.
Trumbull Elec. Mfg. Co.
Westinghouse Elec. & Mfg. Co.
Wurdack Elec. Mfg. Co.

SWITCHES, BABY KNIFE
Bryant Elec. Co.
General Elec. Co.
Mutual Elect. & Mach. Co.
Trumbull Electric Mfg. Co.

SWITCHES, BATTERY
Hubbell, Inc., Harvey.
Manhattan Elec'l Supply Co.
Ostrander & Co., W. R.
Partrick & Wilkins Co.
Trumbull Electric Mfg. Co.

SWITCHES, DISCONNECTING
General Electric Co.
Westinghouse Elec. & Mfg. Co.

SWITCHES, FIXTURE
Hubbell, Inc., Harvey.
Mutual Elect. & Mach. Co.
Pass & Seymour, Inc.

SWITCHES, KNIFE
Adam Elec. Co., Frank.
Crouse-Hinds Co.
General Elec. Co.
Hart Mfg. Co.
Mutual Elect. & Mach. Co.
Trumbull Elec. Mfg. Co.
V. V. Fittings Co.
Westinghouse Elec. & Mfg. Co.

SWITCHES, SAFETY
Adam Elec. Co., Frank.
Crouse-Hinds Co.
General Elec. Co.
Johns-Manville, Inc.
Mutual Elec. & Mach. Co.
Trumbull Elec. Mfg. Co.
V. V. Fittings Co.

SWITCHES, SNAP
Arrow Electric Co.
Connecticut Tel. & Elec. Co.
Cutler-Hammer Mfg. Co.
General Elec. Co.
Hart Mfg. Co.
Hubbell, Inc., Harvey.
Mutual Elect. & Mach. Co.
National Metal Molding Co.
Pass & Seymour, Inc.
Trumbull Electric Mfg. Co.

SWITCHES, TIME, AUTOMATIC
General Elec. Co.

SWITCHES, VOLTMETER
Frank Adam Electric Co.
Condit Electrical Mfg. Co.
Crouse-Hinds Co.
Trumbull Elec. Mfg. Co.

TAPE, INSULATING
Bishop Gutta-Percha Co.
Clifton Mfg. Co.
General Elec. Co.
Johns-Manville, Inc.
N. Y. Insulated Wire Co.
Westinghouse Elec. & Mfg. Co.

TAPS, CURRENT
Hubbell, Inc., Harvey.

TELEGRAPH INSTRUMENTS
Western Electric Co.

TELEPHONES, LIMOUSINE
Western Electric Co.

TELEPHONES
Connecticut Tel. & Elec. Co.
Stanley & Patterson
Western Elec. Co.

TERMINALS, CABLE
Mutual Elec. & Mach. Co.
Standard Underground Cable Co.

TERMINALS, TELEPHONE
Standard Underground Cable Co.
Western Elec. Co.

TERMINALS, UNDERGROUND SERVICE
Dossert & Co.

TOASTERS
Landers, Frary & Clark.
Westinghouse Elec. & Mfg. Co.

TOOLS, BORING, ELECTRICIAN'S
Electric Appliance Co.
Stanley & Patterson.

TOOLS, COMMUTATOR TRUING
General Elec. Co.

TOOLS, PORTABLE, HAND
General Elec. Co.

TRANSFORMERS
Connecticut Tel. & Elec. Co.
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

URNS, ELECTRIC
Landers, Frary & Clark.

VULCANIZERS, ELECTRIC
Westinghouse Elec. & Mfg. Co.

WARMERS, FOOT AND RUG
Westinghouse Elec. & Mfg. Co.

WASHERS, CLOTHES
Federal Sign System (Electric).
Western Elec. Co.

WASHERS, DISH
Western Elec. Co.

WELDING MACHINES, ELECTRIC
General Electric Co
Westinghouse Electric & Mfg. Co.

WIRE, ANNUNCIATOR AND OFFICE
American Steel & Wire Co.
General Elec. Co.
Hazard Mfg. Co.
Standard Underground Cable Co.

WIRE, ARMORED CABLE
Hazard Mfg. Company.
National Metal Molding Co.
Sprague Elec. Wks.

WIRE, AUTOMOBILE
Belden Mfg. Co.
General Elec. Co.
Indiana Rubber & Ins. Wire Co.
N. Y. Ins. Wire Co.
Rome Wire Co.
Safety Ins. Wire & Cable Co.

WIRE, BARE COPPER
Hazard Mfg. Company.
Rome Wire Co.
Standard Underground Cable Co.

WIRE, FUSE
Appleton Electric Co.
Chicago Fuse Mfg. Co.
General Elec. Co.

WIRE, GALVANIZED STRAND
Hazard Mfg. Company.

WIRE, IRON
American Steel & Wire Co.

WIRE, LEAD ENCASED
American Steel & Wire Co.
Atlantic Ins. Wire & Cable Co.
Bishop Gutta-Percha Co.
General Electric Co.
Habirshaw Elec. Cable Co.
Hazard Mfg. Co.
Indiana Rubber & Ins. Wire Co.
N. Y. Insulated Wire Co.
Standard Underground Cable Co.
Western Elec. Co.

WIRE, MAGNET
American Steel & Wire Co.
Ansonia Electrical Co.
Belden Mfg. Co.
General Electric Co.
Hazard Mfg. Co.
Rome Wire Co.
Standard Underground Cable Co.
Western Electric Co.

WIRE, RUBBER COVERED
A. A. Wire Co.
American Steel & Wire Co.
Atlantic Ins. Wire & Cable Co.
Belden Mfg. Co.
Bishop Gutta-Percha Co.
Boston Ins. Wire & Cable Co.
Detroit Insulated Wire Co.
General Electric Co.
Habirshaw Elec. Cable Co.
Hazard Mfg. Company.
Indiana Rubber & Ins. Wire Co.
N. Y. Insulated Wire Co.
Rome Wire Co.
Standard Underground Cable Co.
Western Elec. Co.

WIRE, TELEPHONE
A. A. Wire Co.
Belden Mfg. Co.
Rome Wire Co.
Western Electric Co.

WIRE, WEATHERPROOF
American Steel & Wire Co.
Ansonia Electrical Co.
General Electric Co.
Hazard Mfg. Co.
Rome Wire Co.

SUPERIOR CONDUITS

AMERICAN CIRCULAR LOOM CO.

90 West St., New York

Boston Los Angeles Seattle
Chicago San Francisco Toronto

ATLANTIC
Insulated Wires

Atlantic Insulation is notable for its dependability and maximum service.

DOLPHIN, Code; TRITON, High Grade; and NEPTUNE, Extra High Grade, are three widely known and extensively used Atlantic Wires.

If you want to build or hold a reputation for quality work, see that "Atlantic" goes in the job.

Price lists and discounts upon request.

ATLANTIC
Insulated Wire & Cable Company

New York, N. Y., 52 Vanderbilt Avenue.
Factory: Stamford, Conn.

Americore
RUBBER-COVERED
Wire

for interior wiring

All sizes and voltages.
Thoroughly reliable. Safe.
Underwriters' inspection and endorsement
Illustrated catalogue—free

American Steel & Wire Company

CHICAGO
NEW YORK

COPPER WIRE

Bare and insulated for every kind of electrical work.

COPPER RODS TROLLEY WIRES

Rome-Wire

ROME WIRE COMPANY

Main Plant and Executive Office, ROME, N. Y.
"Diamond" Branch BUFFALO, N. Y.

District Sales Offices:

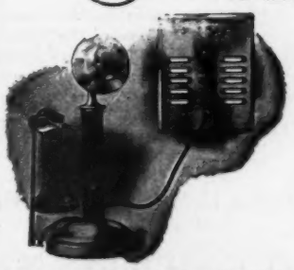
NEW YORK
50 Church Street
CHICAGO, ILL.
14 E. Jackson Blvd.
DETROIT, MICH.
25 Parsons St.
LOS ANGELES, CAL.
J. G. Pomeroy, 336 Azusa St.

YAGER'S
Trade Mark Registered
SOLDERING SALTS

Buy it of your Jobber in ½ lb., 1 lb., and 5 lb. Blue and White Enameled Cans. Ask for new 1922 prices.

ALEX R. BENSON CO., Inc.
HUDSON, N. Y.

CONNECTICUT TELEPHONES
FOR INTERIOR USE



You do not have to wait for a revival of building activities to do a profitable telephone business. There are hundreds of opportunities for the installation of Connecticut telephones in private houses, apartment houses, banks, factories, offices, hospitals, schools and other institutions right in your own city.

WRITE FOR CATALOG 29-A.

CONNECTICUT TELEPHONE & ELECTRIC COMPANY
Meriden, Connecticut, U. S. A.

"DETROIT" RUBBER COVERED WIRES

Rubber Insulated Wires and Cables
FOR EVERY ELECTRICAL PURPOSE
DETROIT INSULATED WIRE CO.
DETROIT, MICH.

SUBSCRIBE FOR THIS MAGAZINE TODAY AND RECEIVE THE REPORTS OF NATIONAL ASSOCIATION ACTIVITIES IN EVERY ISSUE

Published Monthly

$2.00 a Year

NATIONAL ELECTRAGIST

15 West 37th St., New York City

TABLE OF CONTENTS

Page

Editorials ---- 33
- Good Times Movement
- That Recodification Committee
- Radio, the Limitless Area
- Undeveloped Water Power
- Study Lighting Conditions
- Not Good Psychology
- Keeping Tabs on Credit

Getting New Business Via the Radio Route ---- 35
Special Field for Electragists ---- 37
Next National Convention ---- 39
Actual Time Studies in Estimating ---- 40
Benefits of Standard Accounting System ---- 43
Why Jobber and Electragist Should Work Together ---- 44
Relation of Central Station to Electragist ---- 45
Simple Method of Contract Accounting ---- 46
The Why of Your Trade Paper ---- 47
Contracting ---- 51
Code Chats ---- 53
Cost Finding and Cost Control ---- 54
Organization Activities ---- 56
- National Executive Committee Meeting
- Connecticut State Meeting
- Davis in British Columbia
- Southern California Supports National
- N. E. L. A. Convention
- Twin City Exhibition
- Denver Industrial Exposition

Manufacturing ---- 67

ADVERTISING INDEX

Page

A

A. A. Wire Co. ---- 25
Adam Electric Co., Frank ---- 21
Alphaduct Co. ---- 28
American Circular Loom Co. ---- 77
American Steel and Wire Co. ---- 77
Ansonia Electrical Co. ---- 26
Appleton Electric Co. ---- 14
Arrow Electric Co. ---- 4
Atlantic Insulated Wire & Cable Co. ---- 77
Audel & Co., Theo. ---- 70

B

Beardslee Chandelier Mfg. Co. ---- 6
Benson, Alex R. ---- 77
Berry, A. Hall ---- 2
Bishop Gutta-Percha Co. ---- 24
Block & Co., Lynton T. ---- 3rd Cover
Boston Insulated Wire & Cable Co. ---- 24
Bryan Electric Co. ---- 23
Buyers' Guide ---- 74 and 76
Business Record ---- 4th Cover

C

Century Electric Co. ---- 18
Chicago Fuse Mfg. Co. ---- 20
Clifton Mfg. Co. ---- 75
Connecticut Tel. & Electric Co. ---- 77
Code at a Glance ---- Front Cover
Commonwealth Edison Co. ---- 80

D

Detroit Insulated Wire Co. ---- 77
Dossert & Co. ---- 75

E

Emerson Electric Mfg. Co. ---- 18
Enameled Metals Co. ---- 27

F

Fralick & Co., S. R. ---- 19
Freeman Electric Co., E. H. ---- 11

G

General Electric Co. ---- 32

Page

H

Hart Mfg. Co. ---- 27
Hart & Hegeman Mfg. Co. ---- 79
Hazard Mfg. Co. ---- 14
Hubbell, Inc., Harvey ---- 17
Hygrade Lamp Co. ---- 29
Hartford Mach. Screw Co. ---- 70

I

India Rubber & Insulated Wire Co. ---- 29

J

Jobbers' Quick Reference ---- 71

American Elec'l Supply Co. ---- 71
Baltimore Elec'l Supply Co. ---- 71
Brooklyn Elec'l Supply Co. ---- 71
Doubleday-Hill Electric Co. ---- 71
Elec. Supply & Equipment Co. ---- 71
Fobes Supply Co. ---- 71
Nat'l. Elec'l Supply Co. ---- 71
Newark Elec'l Supply Co. ---- 71
Rumsey Electric Co. ---- 71
Southern Electric Co. ---- 71

Johns-Manville, Inc. ---- 31

L

Lighting Fixture Ready Reference ---- 72

Acme Lighting Fixture Co. ---- 72
Chicago Reedware Mfg. Co. ---- 72
Clinton Metal Lamp Co. ---- 29
F. W. L. Fullerton, Inc. ---- 72
Shapiro & Aronson, Inc. ---- 72
Planetlite Co., Inc. ---- 72

Ltg. Fixtures and Lighting ---- 10

M

Machen Electric Mfg. Co. ---- 73
McGill Mfg. Co. ---- 80
Market Place ---- 70
Minerallac Elec. Co. ---- 28

Page

N

National Executive Committee ---- 16
New York Insulated Wire Co. ---- 22
Nat'l. Lamp Works ---- 3
Nat'l. Metal Mold Co. ---- 20
Nat'l. X-Ray Reflector Co. ---- 69

O

Ostrander & Co., W. R. ---- 26

P

Partrick & Wilkins Co. ---- 30
Pass & Seymour, Inc. ---- 7
Phila. Electric Co., Supply Dept. ---- 29

R

Richards & Co., Geo. ---- 5
Robbins & Myers Co. ---- 1
Roberts Elec. Supply Co., H. C. ---- 26
Rome Wire Co. ---- 77

S

Safety Insulated Wire & Cable Co. ---- 24
Schwarze Electric Co. ---- 25
Sears, Henry D. ---- 8
Sherman Mfg. Co., H. B. ---- 28
Sprague Electric Works ---- 21
Standard Accounting System ---- 4th Cover
Standard Underground Cable Co. ---- 24
Stanley, Arthur F. ---- 28
Stanley & Patterson ---- Second Cover
Steel City Electric Co. ---- 25

T

Thomas & Betts Co. ---- 22
Trenton Porcelain Co. ---- 30
Trumbull Electric Mfg. Co. ---- 23
Tubular Woven Fabric Co. ---- 15

W

Western Electric Co. ---- 9
Westinghouse Elec. & Mfg. Co. ---- 12, 13
Wurdack Electric Mfg. Co., Wm. ---- 73

The Line of Least Resistance

—not just a

"Tumbler" Switch

but a complete line

One of the "Old Reliable" H & H Switches

New Surface Switch

The porcelain or composition base is sturdy and will stand hard knocks, yet it is compact. The Current carrying parts are thoroughly insulated from the mechanism and from the handle. The H. & H. switch handle is made of metal, hence unbreakable but absolutely safe.

Surface Tumbler Switches
Single-Pole Tumbler Switches
Double-Pole Tumbler Switches
Three-Way Tumbler Switches
Four-Way Tumbler Switches
Flush Tumbler Switches
Porcelain-Base Tumbler Switches
Composition-Base Tumbler Switches
Shallow Tumbler Switches

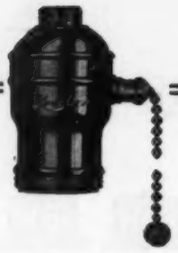
WRITE FOR OUR NEW SWITCH BOOKLET

THE HART & HEGEMAN MFG. CO.
HARTFORD, CONN., U. S. A.

H&H SWITCHES

2002

APPROVED GUARANTEED



Write for Sample and Prices

Levolier
REG. U.S. PAT. OFF.

660 WATTS

The pull socket with a LEVER that works in any direction and won't break off.

The chain or lever may be removed or replaced without disturbing the shell.

A miniature knife switch mechanism to open and close circuit—the only proven type for heavy loads.

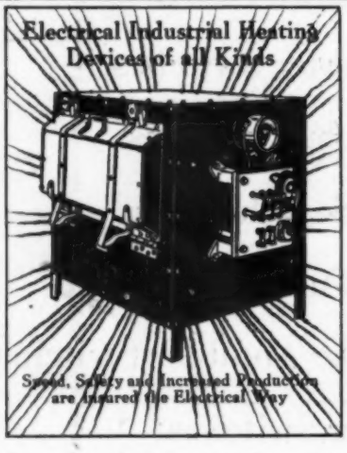
McGILL MANUFACTURING COMPANY
VALPARAISO, INDIANA

Wanted
For Sale

Help Wanted
Situations Wanted

You'll find all of these classifications on "THE MARKET PLACE" page of this publication every month. Look for it—read it! You'll find that it's worth a year's subscription when you want to take advantage of one of its many offers.

Use the
"MARKET PLACE"
When You Want
To Buy or Sell


Electrical Industrial Heating Devices of all Kinds
Speed, Safety and Increased Production are Assured the Electrical Way

Electricity
has become
supreme among
Heating
Methods

It has solved heating problems of diverse kinds for manufacturers of various commodities.

Because of their simple construction, electric heating devices require no elaborate mechanism. The heat control and saving in floor space are features possessed by no other devices. Electric Industrial Heating Installations require fewer employees for efficient operation.

Phone Randolph 1280, Local 168, or write Industrial Heating Division, Contract Department,

Commonwealth Edison Company

Edison Building, 72 West Adams Street, Chicago

UNIVERSAL
ESTIMATE
SHEETS

: : : :

They Simplify
Your Estimating

Get a Supply
from

NATIONAL ASSOCIATION
ELECTRICAL CONTRACTORS & DEALERS

15 West 37th St.,
New York